THE UNITED STATES
STRATEGIC BOMBING SURVEY

FINAL REPORT

Covering Air-Raid Protection and Allied Subjects in

JAPAN

Civilian Defense Division
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This report was written primarily for the use of the U. S. Strategic Bombing Survey in the preparation of further reports of a more comprehensive nature. Any conclusions or opinions expressed in this report must be considered as limited to the specific material covered and as subject to further interpretation in the light of further studies conducted by the Survey.

FOREWORD

The United States Strategic Bombing Survey was established by the Secretary of War on 3 November 1944, pursuant to a directive from the late President Roosevelt. Its mission was to conduct an impartial and expert study of the effects of our aerial attack on Germany, to be used in connection with air attacks on Japan and to establish a basis for evaluating the importance and potentialities of air power as an instrument of military strategy for planning the future development of the United States armed forces and for determining future economic policies with respect to the national defense. A summary report and some 200 supporting reports containing the findings of the Survey in Germany have been published.

On 15 August 1945, President Truman requested that the Survey conduct a similar study of the effects of all types of air attack in the war against Japan, submitting reports in duplicate to the Secretary of War and to the Secretary of the Navy. The officers of the Survey during its Japanese phase were:

FRANKLIN D'OLIER,
Chairman.

PAUL H. NITZE,
HENRY C. ALEXANDER,
Vice-Chairmen.

HARRY L. BOWMAN,
J. KENNETH GALBRAITH,
RENSIS LIKERT,
FRANK A. MCNAMEE, JR.,
FRED SEARLES, JR.,
MONROE SPAGHT,
DR. LEWIS R. THOMPSON,
THEODORE P. WRIGHT,
Directors.

WALTER WILDS,
Secretary.

The Survey's complement provided for 300 civilians, 350 officers, and 500 enlisted men. The military segment of the organization was drawn from the Army to the extent of 60 percent, and from the Navy to the extent of 40 percent. Both the Army and the Navy gave the Survey all possible assistance in furnishing men, supplies, transport, and information. The Survey operated from headquarters established in Tokyo early in September 1945, with subheadquarters in Nagoya, Osaka, Hiroshima, and Nagasaki, and with mobile teams operating in other parts of Japan, the islands of the Pacific, and the Asiatic mainland.

It was possible to reconstruct much of wartime Japanese military planning and execution, engagement by engagement, and campaign by campaign, and to secure reasonably accurate statistics on Japan's economy and war production, plant by plant, and industry by industry. In addition, studies were conducted on Japan's over-all strategic plans and the background of her entry into the war, the internal discussions and negotiations leading to her acceptance of unconditional surrender, the course of health and morale among the civilian population, the effectiveness of the Japanese civilian defense organization, and the effects of the atomic bombs. Separate reports will be issued covering each phase of the study.

The Survey interrogated more than 700 Japanese military, government, and industrial officials. It also recovered and translated many documents which not only have been useful to the Survey, but also will furnish data valuable for other studies. Arrangements have been made to turn over the Survey's files to the Central Intelligence Group, through which they will be available for further examination and distribution.

ACKNOWLEDGMENT

The following report has been prepared not as a series of separate studies but rather as a complete over-all account of the organization and operation of Japanese Civilian Defense, including passive defense installations and precautions, and evacuation and welfare. All of the factual information contained therein was secured by investigations in the field, and this report is the composite result of the free interchange of data and ideas among all those who participated in planning and executing the mission. Nevertheless, it is appropriate to identify the following members of the Civilian Defense Division who carried the major responsibility:

Col. F. A. McNamee, Jr., F.A.,
Director,
Col. J. B. Warden, F.A.,
Chief of Division,
Col. E. R. Closson, Inf.,
Executive Officer,
Col. H. R. Yocum, F.A.
Col. K. E. Miller, U.S.P.H.S.
Lt. Col. J. H. Ahrens, A.G.D.
Lt. Col. B. W. Beers, Inf.
Lt. Col. G. S. Reeves, C.E.
Lt. Col. J. H. Shoemaker, C.M.P.
Lt. Col. W. H. Frederick, Jr., A.C.
Maj. L. O. Goas, A.U.S.
Lt. Comdr. O. J. Emory, U.S.N.R.
Lt. Comdr. B. E. Rice, U.S.N.R.
Capt. R. W. Jeffery, A.C.
Lt. F. H. Lewis, U.S.N.R.

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PART I

JAPANESE CIVILIAN DEFENSE

EARLY START

Accounts of Japanese air-raid-defense drills were published in the Japanese papers as early as the year 1928. As that was before the "China Incident," when Japan was at peace with the world, it can only be surmised what their real purpose was. Certainly, from the standpoint of civilian defense as understood by the Occidental nations, these exercises, comprising gas mask drill, blackout and elementary first aid, contributed little to training the public in the duties they were to be required to perform several years later under unprecedented conditions. It may be that Japan, then coming of age as a nation and considering herself a first-class power as a result of her diplomatic successes following World War I, was running true to form in imitating her equals. Germany had air-raid drills. Why not she? But possibly the most logical assumption is that thoughts of war were already stirring in the minds of the powerful bellicose clique then in control of the Japanese government. What could be more natural than to adopt such means to condition the public mentally, by drills which seemed play at the time, to later realities which would be far more than casual pastimes when they occurred?

The Japan Times of 6 July 1928 gives an enthusiastic account of when "siren shrieks rent the air, two million odd citizens (of Osaka) tasted the experience which military experts predict will be the lot of the civilian populations in the event of a war in the future." The paper goes on to tell of the blackout effected throughout the city, of the sham gas attack and the gallant doctors and nurses who gave medical attention to simulated victims, of ambulances rushing around, and all the other incidents reminiscent of the early days of civilian defense activities in the United States. And, aside from the psychological effect, the exercise was probably of little value.

Such then were the beginnings of civilian defense in Japan, and it is obvious that the system's weaknesses, as developed later, could not be blamed on the lack of any early start.

MISSION

The early development of Japanese civilian defense has just been summarized, and, at this point, it is pertinent to consider what it was trying to accomplish, for evidence of definite and concrete objectives on he part of the national authorities is not apparent to the student of the subject. The mission of civilian defense, as understood by European countries and the United States was, briefly: to minimize the effects of enemy bombing on civilian communities, industrial plants and other installations except those of the armed forces and thereby contribute to the over-all war effort of the nation.

EXECUTION OF MISSION

Now "minimize" is an elastic term, so that a yardstick has to be provided to measure the degree of success or failure of air-raid-protection forces. It may be said, therefore, that their capabilities are demonstrated by the extent to which they evacuate the population, give adequate warning, provide shelter, prevent fires from spreading, save lives of those trapped in buildings, handle expeditiously the care of casualties and restore communities to a state of normal operation. Judged by those factors, the results of Japanese civilian defense were spotty. Some of its services definitely cushioned the effects of bombings, while others were negligible. Portions of the nonessential population were evacuated from the larger cities. Some type of shelter even though generally inadequate was provided for the entire urban population. Adequate air-raid warning was generally given. Fire lanes were constructed and sufficient organization was in existence to give some form of leadership to all people affected by the raids. It would probably be no exaggeration to say that Japanese casualties would have been several times greater had these steps not been taken.

In almost every case, however, proper planning, equipment, training and execution would have

enabled the civilian defense forces further to reduce, at times drastically to reduce, the number of casualties actually suffered. For example, tunnel-type shelters dug into the hillsides were available at Nagasaki, and, had they been fully used, experience indicates that 90 percent of the people in lateral passages would have escaped serious injuries. Likewise, experience at Nagasaki indicates that emergency medical services made a definite contribution in reducing the number of fatalities. Had more competent medical care been available, a still larger number would have been saved. It is the opinion of this Division that optimum civilian defense measures can reduce injuries and fatalities to one-twentieth or less of the number that would be expected were no such measures taken.

Civilian defense forces failed to achieve a full measure of accomplishment because their prior planning was based upon false premises and their equipment was insufficient to meet even the emergencies which had been anticipated. As a further extenuating circumstance, however, it must be noted that civilian defense is part of a team and when its partner, active defense, falls apart to the extent that the enemy can bomb whenever and wherever he pleases, the war is lost and civilian defense faces an insuperable task. No civilian organization can ever carry such a burden; no mission can justifiably demand such a duty. This was the situation in Japan when the AAF and the Navy Air Force began their work in earnest.

The seriousness of the problem confronting the civilian defense forces is brought home all the more emphatically when the figures for casualties and property damage are considered. It is estimated that approximately 159,744 tons of bombs (58,229 tons of high explosives, 98,478 tons of incendiaries, and 3,037 tons of fragmentation) were dropped on Japan by the Army and Navy from February to August 1945. Figures obtained from the Japanese Ministry of Home Affairs show that 269,187 persons were killed as the result of aerial attacks; 109,871 were seriously injured; and 195,517 were slightly injured. Buildings completely burned totaled 2,455,598; partially burned, 30,124; completely demolished, 54,915; and partially damaged, 63,840. ("Seriously injured," as used here, applies to those requiring hospitalization; "slightly injured," those who required only first-aid treatment; "partially burned" or "damaged" indicates property which can be repaired.) It is logical to assume that actual casualty figures are even higher than estimated by the Japanese; it is know that many bodies still lie in the rubble; means of identification was haphazard; there was no comprehensive system of accounting for patients treated at first-aid stations and hospitals; and records were often lost or destroyed.

DEVELOPMENT OF PROGRAM

False Concept

Civilian defense authorities erred in estimating the potentialities of future air attacks because the military informed them that there could not possibly be any mass raids on the home islands; that, at most, not more than two or three planes might slip through and, then, only for the purpose of pin-point bombing on certain especially remunerative targets. Plans were accordingly made on that false concept of what would be necessary.

Saturation raids consequently caught the air-raid-defense forces off guard and totally unprepared in procedures and equipment with the result that civilian defense organization was overwhelmed in nearly every instance. Man power, in general, was sufficient, but poor leadership and misdirected effort rendered it less effective than it might have been.

National Characteristics Facilitated Development

The development of the civilian defense program from the point of view of public cooperation was undoubtedly greatly facilitated by the background and characteristics of the people. During the centuries of feudalism certain attitudes and patterns of thought had become deeply imbedded in the Japanese character, the most important of which, for the purpose of civilian defense, were conformity, respect for authority, obedience, group consciousness combined with an unusual sensitiveness to social and community attitudes (the importance of "face"), and loyalty to superiors. In contrast to these totalitarian virtues, however, should be noted the lack of originality and initiative. The government and the armed forces used every device to perpetuate the qualities favorable to them. Ordinary citizens could, therefore, be expected to follow instructions without question and thus form a dependable foundation for civilian air defense. But leadership and planning had to be effective, since John Q. Citizen was incapable of improvising to meet unexpected emergencies, and, in this connection, the reaction of the people was in direct

proportion to the quality of leadership. The product resulting from the mixture of all these ingredients will be discussed in subsequent paragraphs.

Ready-Made Citizens' Organizations

Unlike most other countries, Japan already had in existence community groups which, upon development and exploitation, provided the broad base upon which the civilian defense structure was built. In the feudal days there had been five-man groups, composed of the heads of five families, which acted as liaison agents between the feudal lords and the people. These groups passed through various stages until, in 1932, their name was changed to that of "Block Association," and entire cities and towns were divided into block association subdivisions. At about the same time another ancient organization called "Neighbors' Mutual Assistance" broadened its scope and became known as the "Neighborhood Group" in which membership became compulsory. Subsequently this group found itself subordinated to the block association in the chain of command. Local governmental agencies, especially the police, soon discovered that this system would greatly facilitate the complete control over the people which Japan's political course then demanded. The fact that each individual was responsible to the group and had his every action scrutinized and criticized by the group could not help but contribute to greater uniformity of thought and action on the part of the populace. Consequently, about 1938, with the encouragement of the national government, the prefectures established the neighborhood group, block association and, in some cases, the federated block association as government-sponsored citizens' organizations and began utilizing them as agencies for air defense and other wartime services.

Japan was fortunate in that it had another group already in existence which was to prove of considerable value as an auxiliary to the police and fire forces. As far back as the Tokugawa Era (1575–1865) the citizens of the growing cities of Japan, especially the merchants and property owners, had banded together in volunteer fire-fighting groups for the protection of their lives and property. These groups continued to develop through the Meiji Era and into modern times, finally resolving themselves into local groups such as the self-protection units of Tokyo. As Japan's preparations for war developed, it became obvious in 1939 that some form of civilian defense groups would become necessary to supplement the regular police and fire services, and the auxiliary police and fire units were established by a Ministry of Home Affairs' decree, dated 24 January 1939. The people set about reconverting their existing forms of civilian emergency services into auxiliary police and fire units, establishing them throughout the country, both in rural and urban areas. As will be seen later these units were often the only fire-fighting forces available in rural areas, and were of considerable assistance to the police and fire services in the cities in fighting small, incipient fires, but were of little value in combating conflagrations.

National Government Takes Over

From 1928 to 1937, civilian air defense in Japan was confined to the "six great cities" (Tokyo, Osaka, Nagoya, Kyoto, Yokohama, and Kobe), but with the promulgation of the national air-defense law of April 1937, (which, as may be noted, was closely related to the attack on China, 7 July 1937) civilian air-raid defense became a nation-wide program under the jurisdiction of the Minister of Home Affairs. Thereafter, there was a definite increase in the interest displayed concerning these matters. But the history of its development was marred by confusion, conflicting authority, inadequate and incoherent planning.

Conflicting Agencies

The over-all responsibility for civilian defense rested with the national Ministry of Home Affairs but there were continual conflicts arising with other Ministries which were indirectly connected with air-raid protection. The situation was further complicated by the creation in 1939 of two volunteer air-defense organizations on the national level, the Great Japan Air Defense Association and the Great Japan Fire Defense Association. Both of these organizations were designed in general to give prestige to the civilian air-defense program in their respective fields, to act as sponsoring agencies with respect to training and propaganda and to provide financial assistance to volunteer civilian defense organizations. The situation became so involved that the Air Defense General Headquarters was created 1 November 1943 (another example of making a new plan to correct an evil) for the purpose of coordinating conflicting plans and settling jurisdictional disputes. Unfortunately, the Air Defense General

Headquarters was never given sufficient power actually to integrate the air-defense program; that is, it was coordinate with, not above, the ministries. It became, therefore, only a clearing house and planning center rather than an operational headquarters.

Administration and Responsibility

The decrees, orders and directives issued by national authorities were often in the most general terms and their actual execution became the responsibility of the governors of the 47 prefectures in Japan. The prefectural administration furnished the power to make the wheels go 'round, and, at the same time, adapted the provisions of the national policies to meet local conditions. In order fully to comprehend civilian air-defense administration in Japan the role of the police must be considered. Let it be noted that there were no local police forces in Japan—all were prefectural police—and they exercised a degree of authority over the lives of individual citizens which would be intolerable in democratic countries. The police thus became the agency through which the government carried the air-defense program to the people. Other prefectural departments carried certain responsibilities with respect to air defense, i. e., Department of Education for pupil evacuation, Economic Section for food and other necessities, Communications Section for emergency communications, but when mass raids occurred and serious emergencies arose, the police did not hesitate to take any and all authority deemed necessary to handle the situation, even though they impinged upon the authority of other departments.

Administrative organization on the local level took two forms: (1) the ward organization in the large cities, and (2) the local organizations in towns and villages. Municipal officers cooperated with prefectural officials in civilian air defense. The geographical subdivisions of the largest cities, called wards, were as a general rule coterminous with the areas under the jurisdiction of district police stations. There was thus a close connection between the local police in each ward and the ward officials, and it was at this level that the influence of the police on the civilian defense organizations was most directly exercised. The police likewise had supervision over air-defense matters in towns and villages through policemen stationed in them or by means of visits at regular intervals.

Summary

From the brief résumé of the confusing status of civilian defense, particularly at the top levels, the decentralization of authority, the usurpation of functions, it requires little imagination to visualize why the air-raid- protection forces were not entirely effectual. Experience has proved that the protection of a nation's people and of its vital industries requires the marshalling of all the people under a unified command and within the framework of a comprehensive plan worked out well in advance of anticipated hostilities to include not only the national level but all political subdivisions.

ACTIVITIES BEFORE RAID

Evacuation

The comparatively small number of casualties resulting from the heavy raids on Japan may be attributed in part to the fact that many persons had left the cities before the raids began in earnest. Whether their leaving was in the nature of flight or the consequence of planned and supervised evacuation is immaterial, since the results of both were identical—the saving of lives. The exodus from urban areas was for the most part, however, haphazard and was caused by panic conditions which upset planning and had a deleterious effect on the war economy.

The Japanese plan for civilian evacuation was, like all other civilian defense measures, based on the assumption that air attacks on the homeland could not be delivered on a large scale or maintained over an extended period. It was the opinion of Japanese authorities that normal governmental public services, augmented for the requirements of the immediate emergency, could cope with any evacuation problems which might arise, and their advance planning was predicated on that assumption. Under the impact of saturation raids, demands upon the evacuation service were so great that it fell down in some phases, but even then no major changes were made in the over-all plan. As far as adults were concerned, the policy of the authorities seemed to have been one of "laissez faire"—let the individual shift for himself.

Of the several phases of evacuation, that for primary school children was by far the most successful. In that connection some interesting figures can be derived. If the average population of the 35 wards of Tokyo for the period of the

heavy raids (February-May 1945) be taken as 3,700,000 (population on 1 February 1945, 4,986,600; on 1 July 1945, 2,452,757) and the number of casualties resulting from the raids as 166,447 (95,972 killed; 70,475 injured), it will be seen that 4.5 percent of the population was killed or wounded. Had there been no primary school evacuation and, if the casualty percentage of 4.5 be applied to the 620,191 pupils evacuated either officially or voluntarily, it can be seen that 27,908 of these children might have been killed or injured, had they remained in the city. This figure is believed to be on the conservative side in view of the helplessness of young children and the fact that the population would have been denser with the children present.

This phase of the program achieved success because of its compulsory features, and it may be assumed that the other projects would have been more effective, had the government insisted and forced the issue. The conclusion is reached that an integrated, well executed and compulsory evacuation program involving all nonessential persons will be necessary in future wars, if nations are to survive the effects of atomic weapons.

Four types of evacuation were contemplated: (1) voluntary precautionary evacuation of nonessential persons from target areas to homes of relatives or friends outside the evacuation areas; (2) removal of air-raid sufferers to relatives or friends in the country; (3) transfer of refugees whose homes had been demolished to create fire breaks and lanes; (4) and evacuation from target areas of school children in the first to sixth grades, inclusive.

The first type, voluntary precautionary evacuation, began early in 1944 and continued on the same voluntary basis even after the saturation raids. Impetus to this movement came after each major reverse suffered by the Japanese forces and especially following the heavy air raids on the home islands. The degree of success as measured at the time of cessation of hostilities indicated that the percentage of population which voluntarily left ranged from 4 percent in a city which was not bombed to 45 percent in a city which had been heavily bombed on more than one occasion. One good feature of this procedure was the ready assimilation and integration of the voluntary evacuee into the home of his relatives or friends in the hinterland; whereas, had he gone among strangers, the problem of maladjustment, because of differences in social status, mode of living and religion, would have been ever present.

It had been planned to evacuate air-raid sufferers (Category 2 above) in the same leisurely manner as the voluntary evacuees. But the extremely heavy demands on transportation lines created by the great numbers of sufferers radically changed that conception of the procedure, and evacuation to predetermined reception areas was not contemplated. Victims continued to be sent to relatives or friends outside the evacuation areas.

Refugees in category 3, those whose houses had been demolished, numbering some 1,800,000 persons, were not provided with substitute housing but were treated in the same manner as voluntary evacuees.

No figures are available for the separate evacuation groups discussed above, but it is estimated that some 8,295,000 persons in all of the above categories were removed.

The evacuation of primary school children was well conceived, integrated and executed. Children were moved by classes to selected communities in the country, accompanied by teachers and domestic help, and there they carried on their school life under their own teachers who also supervised their worship and household chores which had formerly been the responsibility of their parents. In no case were the evacuated classes incorporated into the local school system; consequently, they maintained their own identities. This was the one phase of the evacuation program which became compulsory, and, as a result, approximately 90 percent of the school population within the stated classification was evacuated in two major efforts: the first in August 1944, and the second in April 1945, following the saturation bombings of the preceding month. This was one case where the national government said, "Do this, and we will stand most of the expense." The parent paid the small sum of 10 yen a month, and the balance of the cost was divided, 85 percent being paid by the national government, and 15 percent by the prefecture and municipality of the evacuated area.

Air-Raid Warning

The air-raid-warning system of detection was effective; planes were spotted in time and the warning centrals were notified. The method of warning the public, with its marked resemblance to the American system of a "blue-red-blue" sequence, was also capable of fulfilling its function,

but it failed when the human element involved made errors in judgment as at Nagasaki. There, failure to maintain the "alarm" (red signal) status upon the approach of the atomic bomb plane and its escort resulted in many unnecessary deaths, since most persons had resumed their normal activities and were not in shelters of any kind, where they should have been, had the "alarm" been in effect.

In the big cities sirens were used to sound air-raid signals and means were provided to cover such contingencies as the disruption of the central siren control system. Radio was also used for the transmission of signals and the imparting of pertinent air-raid information following the announcement of the first public signal. The Japanese use of radio followed a course midway between the German practice of announcing to the public all information immediately upon its receipt and the American system of prohibiting any radio announcement except for limited military releases during the course of enemy action. In addition to the broad coverage afforded by sirens and radio, the Japanese provided auxiliary means of dissemination of air-raid warnings for the purpose of warning the sick, the deaf, and those beyond the reach of siren and radio. Colored flags or sleeves, lights, bells, placards and oral announcements by members of volunteer groups were used for that purpose.

Shelters

Since it is impossible to evacuate entire cities, the best means of protection must be provided for essential persons required to remain therein. At the present time, properly constructed and located shelters appear to be the only answer to that problem, and shelters constructed of reinforced concrete of sufficient thickness to withstand the impact of the heaviest bomb anticipated, insulated against intense heat and atomic radiation, and provided with ventilation systems and self-contained oxygen units to provide air in case of conflagration would meet nearly every test. Cities will have to consider the construction of this or an equivalent type of shelter to cope with future air raids, although the cost in a community such as New York would be prohibitive for local finances and would require assistance from national sources.

So far, mention has been made only of the ideal type of shelter. It is undoubtedly true, however, that even the trench shelter, covered or uncovered, afforded a small measure of protection against blast and splinters from high explosives. Underground concrete and concrete-pipe constructions and tunnels bored into the sides of elevations gave the most adequate protection provided in Japan. None of these shelters, however, protected their inmates against suffocation during conflagrations.

The Japanese program called for shelters for everyone, but the construction of most was poor, and it is probable that less than 2 percent of the urban population could be accommodated in tunnel-type shelters, despite the fact that Japanese terrain lent itself generally to this type of construction. (Because of sandy soil and water surface, plus a lack of building materials, there were few large public underground shelters.)

The value of shelters such as were found in Japan varied. In many instances, primitive home shelters proved to be fire traps in which many persons died during incendiary raids. On the other hand, the better-constructed shelters, particularly those of the tunnel type, unquestionably saved many lives and served to cushion the effects of the bombings.

Although it is impossible to give any over-all figures for Japan, the situation in Nagasaki where two extremes were present—the most lethal missile and the largest number of better shelters in proportion to the population—will serve as an example of the important role shelters can play in the civilian defense mission of saving lives. Official records showed that there were tunnel shelters available to accommodate approximately 75,000 persons or about 30 percent of the estimated population of 240,000 at the time of the atomic bomb attack. (It should be noted that, by crowding, possibly 100,000 in all could have been given shelter, and that there were additional tunnel shelters not of official record.) Conservatively using the lowest figure, however, it can be computed that, had the shelters been filled to their rated capacity, 7,500 persons (30 percent of 25,000 recorded deaths) could have been saved, and 16,500 (30 percent of 55,000 estimated injured) could have escaped injury. In other words, the total casualty figure could have been reduced from 80,000 to 56,000. These figures become all the more realistic when it is remembered that less than 400 persons were reported to have been in shelters at the time of the blast, and that investigations showed that scarcely anyone in tunnel shelters received burns or serious injuries.

The Japanese government's shelter program was a curious mixture of vacillation and incompetent thinking. It was known, for example, that in the European war Germany attempted to construct above-ground shelters which would be completely bomb proof, and planned to provide accommodations for the entire population, but that that goal was never achieved. In England, the policy was to construct shelters which were proof against incendiary and 500-pound high-explosive bombs falling no closer than 20 feet, and shelters were available for the entire population. The Japanese government desired that some sort of shelter be provided for everyone, and then left the execution of the program largely to the individual. It suggested plans for types of shelters, but made no effort to furnish materials nor did it provide funds, except in one instance which is described later.

A study of the sequence of orders and directions concerning this subject leads one to the conclusion that the government's interest was mediocre and basically insincere. The first directive for the construction of shelters was issued in July 1942; it called for open trench shelters. In September 1943 the construction of covered trench-type shelters was ordered. In October of the same year a further amendment directed that each house was to have a shelter dug either beneath it or in a near-by open area. In June 1944, another amendment required the covering over of all open trench shelters and the construction of tunnel-type shelters in the sides of hills. The entire cost was to be borne by individual families, prefectural and local governments, businesses and factories. The only exception was in the building of tunnel-type shelters, for which the national government was to reimburse the prefectural and local governments two-thirds of the cost.

Tunnel shelters, the best of any constructed in Japan, deserve special mention here. Most of them, particularly those reinforced with timber or concrete, were protection against bombs as heavy as 500 pounds and some of the tunnel shelters excavated in the sides of mountains gave almost complete protection against bombs of heavier weight, depending, of course, on the extent of overhead coverage. Although the tunnel-type shelters undoubtedly provided the best protection, their value was partially offset by the distance the public had to travel to reach them. Many were constructed in park areas, in shrines, and at the edge of cities which placed them at a considerable distance from the densely populated areas.

Fire Prevention

Wide avenues, extensive park systems, fire-resistant buildings and rigidly enforced building and fire-prevention laws are indicated in future city planning, in order to condition cities to meet the impact of fires caused by air raids.

Japan was a glaring example of the contrary. In that country, where building construction was characterized by flimsy wood and paper buildings housing an extremely dense population, little or no attempt was made in peacetime to reduce or regulate the dangerously inflammable conditions. When war came, it was too late to take effective measures.

Most of the large Japanese cities, however, under the impetus of early fire raids, did create fire breaks and fire lanes by demolishing buildings. Later these fire breaks saved an estimated 10 percent of the protected buildings. The fire lanes, however, failed in their primary purpose, that of preventing the spread of flames, since incendiaries were dropped on both sides of them. But, as avenues of escape from conflagration areas, they saved the lives of thousands of persons who might otherwise have been trapped in narrow and congested streets.

ACTIVITIES DURING AND AFTER RAID

Fire Fighting

Fire-fighting experts are agreed that the most modern fire department would be unable to cope with conflagrations resulting from saturation incendiary air raids. The degree of saturation can best be visualized when it is understood that the average tonnage of incendiaries dropped in heavy raids on Japan amounted to 225 tons per square mile which is equivalent to 0.35 of a ton (700 pounds) per acre. To meet that situation, certain radical steps must be taken. At the present time, it is apparent that all fire-fighting units in a country must be nationalized to provide for a strong centralized control and the ready interchange of equipment, such as pumpers, hose, and couplings. Highly mobile fire-fighting units under national control, with the best of equipment and trained personnel, must be available at strategic points, ready to rush to a stricken city. The principal of mutual aid must be care-

fully worked out, again under a national policy, so that aid from neighboring communities can be utilized promptly and effectively.

Functions of fire departments are closely interwoven with those of civilian defense and it is pertinent at this point to pause for a moment to consider just what contribution the Japanese fire-fighting forces made to the over-all civilian defense effort. This division would like to be able to say that the fire department played a large part in the saving of lives and property, but the facts are quite to the contrary. Inferior equipment, inadequate training, and mediocre personnel made it impossible for them to meet even the lowest of fire-fighting standards in the United States. The most that can be said is that the Japanese fire departments and organized auxiliary fire-fighting units, assisted by householders, were able to prevent the spread of incipient fires and, in some instances, to extinguish them. This situation prevailed during light raids when incendiary bombs were dropped at comparatively wide intervals, or during heavy, concentrated raids when scattered spill-overs were dropped outside the target area. Evidence secured at Osaka and Kobe graphically illustrated this point. But within saturation-raid areas, neither the professional fire department and its auxiliaries, nor the ordinary citizens, either singly or in combination, were able to cope with the conflagrations.

Although Japanese fire departments were not nationalized in the sense that they were directly controlled by the national government, they were standardized to the extent that hose, couplings and threads were the same throughout the country.

Contrary to the practice in the United States and England, Japanese fire departments were under the direct supervision and control of the police. Fire chiefs and many subordinate officials were police officers with little or no knowledge of modern fire-fighting methods. Training emphasized military drills with goose-stepping and saluting. Consequently, firemen were inexperienced in modern fire-fighting techniques and subjects, such as hose and ladder evolutions, rescue, salvage, ventilation, hydraulics, building construction and fire prevention.

Fire-fighting equipment in common use would, in a large part, have been shunned by small-town volunteer departments in the United States. For example, the Osaka fire department, which had 651 pieces of motorized equipment, possessed an American-made LaFrance fire truck imported in 1918, and it was stated that this truck was in better operating condition than Japanese-made trucks not more than five years old. Fire pumps had capacities of 350 to 500 gallons per minute; tools and appliances were old and meager; such mobile fire rigs as salvage, CO_2, foam, rescue, demolition, and even water tanks with booster pumps, were unknown. The ordinary first-aid fire extinguisher and water pump cans so common in the United States were not part of the Japanese equipment. There was no department of vehicle maintenance, with the result that, when skilled mechanics were drafted into the armed forces, 20 percent of the mobile apparatus was constantly out of service. Fire alarm systems and methods of transmitting alarms were obsolete, and the two-way radio included in the equipment of many American departments was not available. Water mains and fire hydrants were too few and too small for extensive use in fire fighting. The maintenance and testing of fire hydrants were inadequate. Static water tanks were for the most part too small to offer more than emergency water for a short period. No practical use was made of the unlimited water supply available in most Japanese cities, for, apparently, no one thought of drafting water from the rivers, moats, canals and wells.

Mobile columns of fire-fighting forces which might have meant the salvation of the harassed and overwhelmed fire department were apparently not thought of either; but, if they had been, it is doubtful whether suitable equipment could have been procured. The few attempts at mutual aid were unsatisfactory since fire equipment from neighboring communities arrived either hours too late or not at all.

There is some question regarding the value of the services of the auxiliary police and fire units at big fires. The professional firemen indicated that they were of little value, but it is believed that these auxiliary forces were successful in controlling incipient fires in many communities and possibly in preventing some blazes that might have developed into conflagrations.

Rescue

The demolition of stone, masonry and reinforced-concrete buildings by high-explosive bombs in Germany necessitated a highly trained and well equipped rescue service. Since there were only a few similar structures in Japan it

might appear that a rescue service would have been unimportant. Such was not the case, however. A number of incidents involving light and flimsy constructions were observed in which the loss of life could have been materially reduced, if the rescue services had been properly trained in rescue techniques, had been provided with modern rescue equipment, and had been supplied with sufficient motor transportation.

The Japanese rescue service was almost totally ineffective for the following reasons: incompetent instructors; failure to study the latest rescue techniques as developed in England and Germany; selection of personnel on the basis of performance of police duties; emphasis in training on prevention of panic and bolstering of morale instead of on practical exercises; no heavy mobile equipment such as power cranes and steam shovels, but only crude hand tools; no listening devices to locate buried persons who were still alive. It was impossible for this service to do much more than to go through the motions, and, at times, even the motions were pointless.

Emergency Medical Services

Preparations for the medical relief of bombing casualties among the civilian population of Japan were in no instance adequate to meet the demands created by saturation raids. The principal weakness of the emergency medical service was in the lack of personnel and equipment, but a badly shattered morale was an important contributory factor. Some of the planning was good. The location of first-aid stations at strategic points in accordance with the density of population was sound. The use of emergency squads to administer on-the-spot, first-aid treatment was excellent. And the plan to shift first-aid workers from quiet areas to critical areas was also well considered.

In spite of the good features of the plan, saturation raids damaged so many medical installations, killed such a large number of workers and so disrupted their units that the medical services were greatly handicapped. Here again, mobile medical units under national authority, had they existed, could have been sent in to relieve the situation by replacing lost personnel, bed capacity and supplies. It is obvious that many victims who died because of lack of medical attention might have been saved.

Japanese first-aid facilities were of an improvised nature and suffered heavily during air raids. In Tokyo and the outlying localities there was a grand total of 857 first-aid stations, of which 419 were destroyed. Their loss was responsible for the considerable but undetermined number of persons who died for lack of prompt and effective first aid.

Established Japanese hospitals had to bear the entire burden of caring for the seriously injured, since no provision had been made to establish emergency hospitals for that purpose. Inadequate as they were in capacity, hospital services were even more restricted when they were most needed after the raids. The bed shortage was indeed a serious matter. In Tokyo, of 275 hospitals designated for the more seriously wounded air-raid victims, 132 were lost. Over-all Tokyo figures for hospitals were as follows: Number of hospitals, 478; number destroyed, 210; number of clinics (9 beds or less), 5,228; total destroyed, 3,849. The total bed capacity of all types of 32,791 before the raids was reduced to approximately 25,000 beds by the bombings.

Medical personnel, in common with the general public, became panic-stricken and fled to places of safety in the country. It is not known at just what period the bulk of the doctors and nurses deserted the city, but some idea may be obtained from the fact that prior to the bombings there were 8,905 doctors and 26,200 nurses in practice. By 1 September 1945 these numbers had been reduced to 2,176 and 3,600, respectively. These figures show why the emergency medical service was inadequate.

Not only was medical personnel lacking, but the deplorable sanitation and equipment of the hospitals and the low level of medical and nursing techniques indicated that the quality of professional service received by air-raid casualties was of an extremely low order. In addition there was a shortage of essential materials such as blood plasma, serums, sulpha drugs and surgical dressings. In the case of the last named item it is interesting to note that dressings had to be used over and over again—often without being properly cleaned or sterilized.

Red Cross

The Red Cross Society of Japan played a role quite different from that of its namesake in the United States. Its main functions were the training of nurses and doctors for the military services and the maintenance of military hospitals plus a limited number of first-aid stations.

Strangely enough, its normal welfare work was almost entirely neglected during the war.

Mortuary Service

The mortuary service came nearer to performing its appointed task than any other of the emergency services having to do with human casualties. In spite of the fact that this service was a distasteful duty, shunned by all except those normally engaged in handling the dead and complicated by religious customs, the leaders of this service finally had to adopt a realistic attitude, abandon traditional methods, and resort to mass cremation in the open or mass burial in common pits. Except at times of enormous catastrophe the mortuary service functioned with a high degree of effectiveness.

Many difficulties were encountered in the identification of the dead. No standard means of identification was provided. Fingerprinting was not used because of its association with criminals. However, a cloth identification tag which was supposed to be attached to all articles of clothing gave sufficient identification unless garments were burned or missing, which was often the case. Some idea of the task faced by the mortuary service officials in Tokyo can be obtained by comparing the normal death rate of 200 to 300 a day in peacetime with the 80,000 casualties of the 10 March 1945 raid. Since the military had given the figure of 30,000 deaths to be expected in excess of the normal annual fatality expectancy, and plans had been made to handle only that number, although it took 25 days following the 10 March raid to clear the ruins of the dead. In true Japanese style, even then no effort was made to improve the system. Instead, the leaders bowed to what they considered the inevitable and planned their future operations along the same lines. This was after all a realistic plan and perhaps better than more elaborate plans that might have been devised but not carried out.

Clearance and Repair

The failure to clear highways and roads and to restore public utilities in the minimum time possible had an adverse and delaying effect on nearly all of the civilian defense services, such as fire, rescue, medical, welfare and the like.

There was little of the resiliency, quick adaptation to circumstances and ingenuity born of urgent necessity that were characteristic of the Germans or British and would be expected of Americans in a similar predicament. During the first light raids, when there was time for the clumsy and involved administrative machinery to function, clearance and repair efforts were relatively successful, but they did not stand the strain of major demands. There is no question but that recovery would have been much quicker, had there been better planning and coordination.

However, no serious planning for emergency recovery measures was done, either nationally or locally, until December 1943, two years after the war with the United States had begun. It was not until the late summer of 1944 that preparations began in earnest and by that time it was too late to assemble repair materials and equipment, to recruit and train auxiliary personnel and to bring about adequate coordination of personnel already available. Actually it took the raids themselves to bring officials to a realistic conception of their problems.

The relationship between the national government and the prefectures was not clear-cut, and the latter did not have full confidence in recommendations sent out by the former. The failure to train auxiliaries for specific restoration measures and the reliance upon civilian defense organizations untrained in the specialized tasks of restoration proved to be costly. Too much of the burden of recovery was left to private enterprise and, lastly, resistance to the idea that careful preparations in advance of a raid were necessary finally gave way to complete resignation in the face of major disasters.

Like all of the civilian defense units the clearance and repair service lacked proper equipment, although the maintenance men of the utilities such as the street railway, the water works, and the electric company usually had their normal peacetime supply.

Emergency Welfare

The emergency welfare service was designed to meet the situation produced by small sporadic air raids, and it was believed that existing governmental agencies could handle any expected emergency. Supplies of food, bedding, clothing and fuel were accordingly collected in quantities sufficient to meet only the anticipated requirements. Under saturation air-raid conditions, however, many of the welfare aid stations were destroyed and the service was unable to keep abreast of demands, and accumulated stocks soon became exhausted, so that it is estimated that

only from 20 to 30 percent of the sufferers produced by the heaviest raids were cared for.

Mobile supply columns such as were found in Germany would have been able to move in to make up the deficiencies, had they been provided by the army or the national government. A modified form of mutual aid did pay dividends, however, when local arrangements which had been made for the preparation of food by volunteer workers in neighboring communities were put into effect. This was particularly true at Nagasaki where the supplementary food from adjacent towns became the major source of supply.

Lack of labor and building supplies prevented the erection of temporary housing, so that it was necessary to scatter air-raid sufferers throughout the area under attack until such a time as arrangements could be made to evacuate them to the homes of relatives or friends. The emergency housing program initiated during the summer of 1945 provided for the erection of only 300,000 small units as against the 2,400,000 dwelling units which had been burned, demolished or damaged.

Relief measures were handled through welfare aid stations distributed throughout affected areas under the supervision of the police, at least for the first three or four days of each emergency. Subsequently they reverted to the control of the regular welfare agencies. In these stations the daily necessities of life were furnished free for a short period, usually not more than five days. Evacuation consultation offices were also established in many of the aid stations to advise sufferers concerning evacuation, employment, relief and traffic conditions.

CONDUCT OF THE PUBLIC

In the midst of chaotic bombing conditions it is imperative that panic on the part of the general public be eliminated, if the civilian defense forces are to function with any degree of effectiveness. A high sense of community consciousness and of responsibility to his neighbors must be inculcated in each individual, and then maintained by a rigid, self-imposed discipline, over-all control being exercised by specifically designated authorities. In order to accomplish that result, a national, comprehensive plan, uniformly enforced, governing the conduct of the public, is necessary. It can be made effective only by constant and varied drills to make the public's reaction practically automatic in any emergency.

Evidence of panic and of failure to obey instructions during heavy air raids was found in many Japanese cities. Individuals fled from the scene of the incident, each man for himself, so that often the civilian defense forces and allied services were left with insufficient personnel to carry out their functions. Others failed to go to shelters as directed and the police lacked authority to enforce compliance. This conduct was in direct contrast with that of the Germans who obeyed orders in general, who stayed and faced heavy bombings, and who, consequently, were available when needed by the authorities.

PROTECTION OF FACTORIES AND UTILITIES

Factory Air-Raid Protection

Fires and damage resulting from small, sporadic raids were handled without difficulty by the factory air-raid-protection forces, but they, like their counterparts in the cities, were unprepared to cope adequately with saturation bombings. In general, it may be said that, in spite of poor equipment and water supply, fires were fought with a will. Post-raid recovery and resumption of production were on occasion reasonably rapid. As an indication of the comparative efficiency of the factory air-raid-protection forces, its effect on absenteeism is noteworthy. Pre-raid absenteeism among regular employees ranged from 20 to 30 percent and was about 13 percent among student employees. Heavy raids increased the percentage among regular employees by only 10 percent and among student employees by 14 percent.

Factory air-raid protection was probably second only to that of the national railroads in efficacy, and there were good reasons for this. War production plants supplied the life blood of the Japanese armed forces. They had at their service a highly trained group of technical experts many of whom had been educated in Western methods and procedures. They had first priority on the procurement of materials, and they had the incentive to provide the best possible protection for their installations. Indeed, air-raid protection was by law the responsibility solely of management. In view of those factors it was expected that the Japanese industrial world would furnish the best example of an air-raid-defense organization in the empire, and indeed it was representative of the best effort, but still far from good in operation.

In many instances the basic planning and organizational set-up were satisfactory. Training and operation were better than the average. But here again, management had been lulled into a sense of false security by the optimistic prophecies of the military and had failed to provide sufficient effective equipment. Because of the late start in providing factory protection, the war of attrition had made such inroads on material that fire-fighting equipment and concrete and steel for air-raid protection were simply not available when needed.

Railroad Air-Raid Protection

The policy of the government railroads was to keep trains rolling on schedule even through air raids. How near they approached this ideal is exemplified by the fact that even in the atomic bomb areas, railroads schedules were resumed in 84 hours. The fact that the railroad system was able to resume operations at all would be significant, but, in this case, the comparatively short time required to restore service was a definite index of the proficiency of the railroads' air-raid-defense force.

The damage to railroads was by no means moderate. Of the government-owned systems alone throughout the nation, 1,130 miles of trackage (5 percent) and 42 bridges were damaged sufficiently to put them out of use, at least temporarily, and 891 (14.4 percent) of the locomotives were destroyed or damaged. In addition, there were destroyed 563 electric cars (28.4 percent); 2,228 passenger cars (19.2 percent); 9,557 freight cars (8 percent); 55,924 miles of communication wires (13.2 percent); 2,640 miles of automatic signal line (63 percent); 21 rolling-stock factories and main repair shops (52 percent); and 16,150,000 square feet of office and operating floor space representing 13.1 percent of the buildings. But despite the extent of damage, less than one-half of one percent (2,500) of employees was killed on duty and even fewer passengers (2,300) than employees met their death while traveling.

The government-owned railroad system provided its own air-raid protection, and, by comparison with similar organizations, it probably ranked first. Among its favorable aspects may be cited the fact that complete authority existed in the chain of command at all level. In that respect, it was fortunate in having its peacetime administrative channels already established and in a position to exercise command in civilian defense matters. The caliber of employees was comparatively high; there was evidence of consistent and serious training; its shelter policy was above average; and its personnel casualties were low. Pride of maintenance had long been characteristic of the several railroad bureaus, and they had only to augment the size of their repair and maintenance forces (in the Tokyo bureau from 5,000 to 8,000) to handle air-raid damage. Mutual aid was confined to assistance among the districts of each bureau, and at no time was any major help obtained from outside sources.

The greatest weakness of the railroad air-raid-defense system was the vulnerability of electric facilities for power, light and communications. Inadequate protection of switching and transformer substations was the rule. Other factors relating to the dark side of the picture were: procrastination on the part of operating officials; planning of the "horse and buggy" type, as one official expressed it, for it covered only defense against known weapons and did not anticipate improvements in warfare techniques. Fire-fighting equipment was again noteworthy by its inadequacy or absence, but that defect was somewhat discounted by the fact that many of the railroad structures were of comparatively modern, fire-resistant construction. Lastly, there was no attempt made to gather stock reserves to meet emergency situations.

National Communications Air-Raid Protection

National communications (consisting of the telephone, telegraph, radio and postal services) provided its own air-raid-protection plans, personnel, and equipment. In spite of the fact that these facilities were seriously overtaxed by war traffic and suffered a severe shortage of critical repair materials, the air-raid-protection plan was executed with comparative effectiveness, and service was maintained to meet the essential requirements of the nation.

Like the railroads, authority in air-raid-defense matters was exercised through the already existing chain of command. Morale, discipline, willingness to serve and attention to duty of the rank and file of employees were good.

Much that was said in criticism of railroad air-raid protection is also applicable to this governmental department: the same early indifference to the security program; procrastination on the part of operating officials; immature and in-

complete planning; frequent changes in directing authority; reluctance to follow instructions or advice of parallel agencies; development of hasty expedients when the heavy bombings came; inadequate fire-fighting equipment; and extensive use of overhead and above-surface lines, which made communications highly vulnerable.

Harbor Air-Raid Protection and Port Security

In a country which depended almost entirely on its harbors through which to import food and raw materials for manufacturing the primary necessities for waging a war, a competent government would certainly provide an effective civilian defense harbor force, together with the proper equipment. The greatest danger to harbors from a civilian defense point of view is that of fire which would destroy installations, raw materials, goods and shipping. Experience shows that such fires did exert a crippling influence on the Japanese war economy.

Appraisal of the Japanese harbor air-raid-protection program reflects little credit on those responsible for its execution, but nevertheless, it is believed that the services accomplished as much as their equipment permitted. Without their efforts, it is estimated that damage would have been at least 20 percent greater. Had there been modern fire boats, manned by crews trained in the latest fire-fighting techniques and assisted by adequately trained and equipped auxiliaries, the fire damage in such vital harbors as Kobe and Yokohama would have been reduced by as much as 50 percent.

Harbor fire departments were characterized by fire boats with ineffective fire streams, practically no foam, and crews whose training had been primarily that of the police. Often these fire boats were converted tugs or similar craft borrowed from private firms. As the war progressed certain harbor fire departments did obtain specially built fire boats, but too late and in insufficient numbers. In operation the fire boat crews had little knowledge of proper fire-fighting technique, and, when a fire got beyond their capabilities, their tendency was to abandon it and endeavor to isolate it without making any attempts at salvage.

Aside from poor equipment the harbor air-raid-defense program was further handicapped by an early failure to coordinate the activities of the numerous agencies and interests concerned. In compliance with directives of the Ministry of Home Affairs, in the Tokyo-Yokohama harbor area, for example, the Maritime Bureau, the railroad, the harbor engineers, two prefectural and several municipal governments, the police, the navy, and many private enterprises took air-raid-defense measures but there was much overlapping of authority, much confusion and much waste of manpower.

OTHER CIVILIAN DEFENSE FUNCTIONS

Blackout

The blackout in Japan was so complete that it affected production and hampered normal activity with little or no compensatory gain in protection. Had the American air forces confined their attacks to pin-point bombings of especially remunerative targets it is possible that it might have been partly effective, but with area bombing the value of a blackout was almost negligible. However, it was in reducing sky glow from coastal cities to protect shipping against attack by submarines that the Japanese considered their light program especially effective.

Camouflage

The value of camouflage as practiced by belligerent nations in World War II has been disputed, but the unscientific and haphazard Japanese technique provided little, if any, deception or protection. Painted patterns, screening by the use of bamboo lattice, fishing nets and the planting of shrubs and sod were the most common methods of deception used. Failure to disguise a prominent and conspicuous object while camouflaging a similar small and scarcely noticeable nearby object; erecting an elaborate screening net over a filtration pond but, at the same time, neglecting to hide the typical curve of the adjacent reservoir dam; darkening the emperor's palace, but ignoring the characteristic grounds and moats around it are a few example of camouflage stupidity which vitiated any value which the program might have had.

Gas Protection

Little need be said concerning the gas protection program. Interest in the subject developed early and reached a peak prior to the attack on Pearl Harbor. It declined progressively thereafter with the conviction that the United States would not use poisonous gases, for it had been observed that gas was not used in the European War. In no instance was there found a con-

prehensive and effective plan against gas, and nothing of consequence was attempted beyond equipping 60 percent of the adult population, but no children, in the 26 major cities with gas masks purchased at the individual's expense. There were no gas-proof shelters available to the general public, and facilities for gas detection and decontamination were crude at best or entirely wanting. As a nation-wide program, the plans for gas protection were impotent in all respects, and, had gas been used, the terror and havoc created would have undoubtedly beggared description.

Air-Raid Protection in Public Buildings

Air-raid protection in buildings devoted to public use was based upon the self-protection system. Employees were organized into squads, such as fire-fighting, first-aid, guide and the like. In most cases personnel were eager and willing to do all they could to protect property, but with such rudimentary equipment as fire-beaters, buckets and mats, and with an inadequate water supply, they were beaten before they started. In addition, flimsily constructed, inflammable dwellings and small shop buildings were often built close to and surrounding modern fire-resistant structures, thereby exposing them to special fire hazards. Moreover, improvised shelters offered little or no protection to either employees or public.

Control Centers

Control centers worked well during raids mainly because the Japanese were fortunate in that few, if any, of these centers were damaged or destroyed. They were well organized as far as personnel and interior mechanical and physical installations were concerned, but the Japanese violated one of the most vital rules in the location and construction of these centers, that is, the rule of protection from bombs. In most cases the main prefectural control centers as well as the smaller control centers of the auxiliary police and fire units and sub-units were situated without regard to protective construction. More striking still was the failure to organize or even plan for alternate control centers in the event of the destruction or disruption of those in operation.

Incident Control

The British as a result of their experience appointed and trained incident control officers, one of whom was assigned to each incident where he assumed complete charge of all civilian defense agencies at the scene. The Germans, however, never adopted this custom and provided for a sequence of command among leaders of the several units reporting at an incident, and the Japanese followed much the same practice. Apparently the system worked well with the Japanese as no evidence to the contrary was uncovered.

Unexploded Bombs

The Army was responsible for the disposal of unexploded bombs and trained special squads for that purpose. Possibly because the percentage of unexploded bombs was extremely low, the system worked well, except in a few instances when the police failed to report the presence of such bombs to the military authorities.

War Damage Claims

One of the means used to bolster the morale of the people was the war damage claims system. The program of compensation and indemnity was remarkably comprehensive in nature, was realistically planned and creditably carried out. Its low-cost insurance for victims of enemy attack, covering death, injuries and property loss, and its plan for compensation under the firebreak program was soundly administered. The record of payments by the government showed that the program was being handled realistically. The compensation law covering only air-raid-defense workers was poorly handled and as an indemnity program it was negligible, but, on the other hand, the more general compensation law providing modest indemnities for all victims of enemy attack more nearly achieved the purpose for which it was established.

COMMENT

The over-all picture of civilian defense in Japan is not a happy one. It is hard to conceive of a nation's undertaking a major war and paying so little heed to the protection of its vital industries, to the continuance of its essential economic life and to the safety of its people, for without them no war effort can be brought to a victorious conclusion. Of course the argument can readily be advanced that saturation bombings were never expected, but skillful national planning must provide for the unexpected and this the Japanese failed to do—just one more error of many committed by the little men who planned to rule the world, or at least a great part of it.

PART II

COMPLETE FINAL REPORT OF JAPANESE CIVILIAN DEFENSE

I. INTRODUCTORY STATEMENT

1. The examination and investigation of Japanese civilian defense planning and operational effectiveness disclosed many weaknesses but also found points of merit.

2. This report endeavors to present a detailed study of the Japanese civilian defense and air-raid-protection organization, its operation, its equipment and the degree of success it achieved in its efforts to mitigate the effect of enemy air raids on human lives and property.

3. The conclusions drawn from a comprehensive and unbiased appraisal of the Japanese concept and operation of civilian protection measures pose certain serious considerations to the student of postwar civilian protection planning in the United States. Furthermore, the experience and conduct of the citizens of Hiroshima and Nagasaki in the atomic bomb raids invite a special study of effective means to minimize the loss of life, with specific reference to heavy shelter protection, adequate emergency medical care and suitable mobile reserves of fire-fighting, rescue, emergency medical and emergency food units needed to reinforce static local organizations.

4. The study traces the early history of air-raid-protection planning in Japan, which was attended by apathy and disinterest on the part of the public and confusion and lack of coordination between civil and military authorities on the national level, until the urgencies of war awoke Japanese officialdom to the seriousness of their military position and the need of adequate civilian protection only when it was too late of accomplishment. The Doolittle raid of April 1942 provided some official stimulus to planning, but created no great anxiety among the population at large. Owing to the scarcity of equipment little interest was taken by the people in learning the simple techniques of self-protection.

5. Confronted by the low values placed on human life by the Japanese and the lack of enthusiastic cooperation in civilian defense on the part of the army and navy, the government soon lost control, once the war had started, over protection plans within the prefectures and cities which were allowed to interpret defense plans and suggestions to meet their own peculiar needs. A great many original organizational plans and much of the army's protective policy became specialized in character and the whole defense program appeared to lose any semblance of a coherent national system of air-raid protection.

6. Following the Japanese loss of the Marshall-Gilbert Islands campaign, government officials began to realize the serious need for adequate civilian defense measures, but the average citizen was still not aware of real peril because he had never been told the truth. Even Japanese intellectuals did not realize the serious defense position in which they were placed until Saipan fell during the Marianas campaign, and only then was it doubted that the army and navy had a protection plan for the home islands.

7. When raids by land-based aircraft increased to saturation proportions and were recurring in most of the important Japanese cities, the civilian defense organizations as created were completely overwhelmed.

8. Experience in Japan forcibly demonstrated that protection of a nation's people and its vital industries requires the marshalling of all the people under a unified command in a comprehensive air-raid-protection plan, not born in the heat and confusion of war, but thoroughly planned for all political subdivisions well in advance of anticipated hostilities and with a knowledge and appreciation of the possible effectiveness of untried weapons.

Scope of Investigation

9. Thorough investigation of Japanese civilian defense planning as well as interrogation of high officials at the cabinet and ministerial level, who were responsible for the planning and develop-

ment of civilian air-raid protection, was made at the national level in Tokyo. Field investigations, including considerable research and many interrogations of responsible officials, were conducted in Osaka, Kobe, Kyoto, the Tokyo Metropolitan District and the atomic-bombed cities of Hiroshima and Nagasaki, as well as other Japanese localities. This purpose was to determine the thoroughness of the Japanese civilian protection plan and the effectiveness of its operation during and after air raids. A detailed plant protection study was made in a number of vital war production industries (several of which had been bombed because of their strategic importance to the Japanese war economy), regardless of their relationship to target cities, in order to cover an average cross section of Japanese heavy industry.

The Period of the Survey

10. The period 24 September 1945 to 1 December 1945 was spent in field investigations in various Japanese communities, with the observations made and the conclusions drawn confined to that period of time.

II. ESTABLISHMENT AND DEVELOPMENT OF THE JAPANESE AIR-RAID-PROTECTION PROGRAM

A. INTRODUCTION

1. *Area and Population of Japan as Related to Vulnerability*

a. The population of Japan (73 millions) is well over half that of the United States, yet Japan is six-sevenths mountainous and its area (146,747 square miles) is equal only to the area of California. The mountainous sections are useful as forest and grazing land, but are incapable of supporting a dense population. Under these conditions, it was inevitable that the narrow river valleys and the small coastal plains of Japan should be among the most densely populated districts of the world. All of the coastal plains support large cities, the largest coastal plain (Kanto) containing the third largest metropolitan district in the world (Tokyo).

b. The physical character of Japanese cities is a result of four factors: (1) the intense pressure of population; (2) the Japanese manner of living; (3) their preference for light, delicate, wood construction; and (4) the relative scarcity of structural steel and heavy construction materials. The residential area of every Japanese city, and even a large part of its central business district, consists of light, inflammable, wooden structures. The characteristic features of Japanese cities are: structural density, extreme inflammability, and narrow thoroughfares. Hence their extreme vulnerability to air raids.

c. The physical characteristics of the country as a whole made it difficult to decentralize either population or industry; nor was it feasible to make any marked changes in the pattern or the structural character of the cities themselves so as to render them less vulnerable. For these reasons, officials who were responsible for air defense in Japan were faced with greater local handicaps than were their opposite numbers in the United States, Germany or even in England.

2. *Foundation of the Air-Defense Program*

a. The administrative organization for civilian air defense is discussed in a separate section of this report. The foundation of Japan's air-defense program, however, lay beyond the purely governmental structure because the essential characteristic of this program was that each echelon of government passed the bulk of its responsibility to the next lower level until it reached the broad base of the volunteer civilian defense organizations, embracing the entire able-bodied adult population.

b. For an understanding of the realities of the civilian air-defense system in operation it is thus necessary to examine: (1) the ordinary Japanese citizen and his attitude toward the program; (2) his training; (3) his equipment for air defense; (4) his ideas in respect to the nature and scope of the prospective raids as determined by the propaganda of the army and the government.

(1) *The People—Characteristics Pertinent to Air Defense.* The great bulk of the citizens of Japan are, quite literally, grandchildren of the serfs of the feudal period which ended only 77 years ago. During the centuries of feudalism certain attitudes and patterns of thought became deeply imbedded in the Japanese character. From the standpoint of air defense, the most important of these were conformity; deep respect for authority; group consciousness combined with an unusual sensitiveness to social or community atti-

tudes (emphasizing the importance of "face" among the Japanese); loyalty to superiors (considered to be the most important of virtues); and, with these, a corresponding lack of originality and initiative. The government, the large business concerns and the armed services used every device to perpetuate these qualities. The typical Japanese was surrounded by a rigid framework of controls imposed upon him by his family, his community, his employer, his government and his religion. The ordinary citizen could, therefore, be expected to follow instructions without question and thus formed a dependable foundation for air defense only on the assumption that leadership and planning were effective and that the raids were of the nature and scope expected. He could not be counted upon to improvise in an emergency. When unexpected developments required sudden changes in the original plans, the people were powerless.

(2) *False Assumptions With Respect to Training.* In addition to the general inadequacy of the program, its foundations were false in that the training was based on false conceptions of the nature and scope of the prospective raids. At no time prior to the first mass raids, in any part of Japan, were air-defense volunteers trained to meet prolonged mass raids of two to three hours duration.

(3) *Inferior Equipment.* The equipment for civilian air defense in Japan was inadequate in quantity and was decidedly inferior in quality to that of the United States, Britain or Germany.

(4) *Propaganda—Its Effects on Air Defense.* (a) The Ministry of Home Affairs, the several prefectural governments, the central offices of the volunteer air-defense organizations on the national level and even the newspapers and department stores of Japan participated in the propaganda for air defense which included pamphlets, posters, radio programs, exhibits, demonstrations, motion pictures and lectures.

(b) In contrast with the civilian air-defense publicity, however, the basic propaganda policy of the government relative to the war as a whole tended to weaken the air-defense program. The extreme optimism of the government throughout 1942–43 and the reluctance of the army to admit the reality of its position thereafter tended to minimize the importance of civilian air defense in the minds of average Japanese. Even leading air-defense officials lacked the knowledge they should have had, and they continued greatly to underestimate their requirements until the first mass raids occurred.

3. *A Brief Summary of the Growth and Development of Civilian Air Defense in Japan*

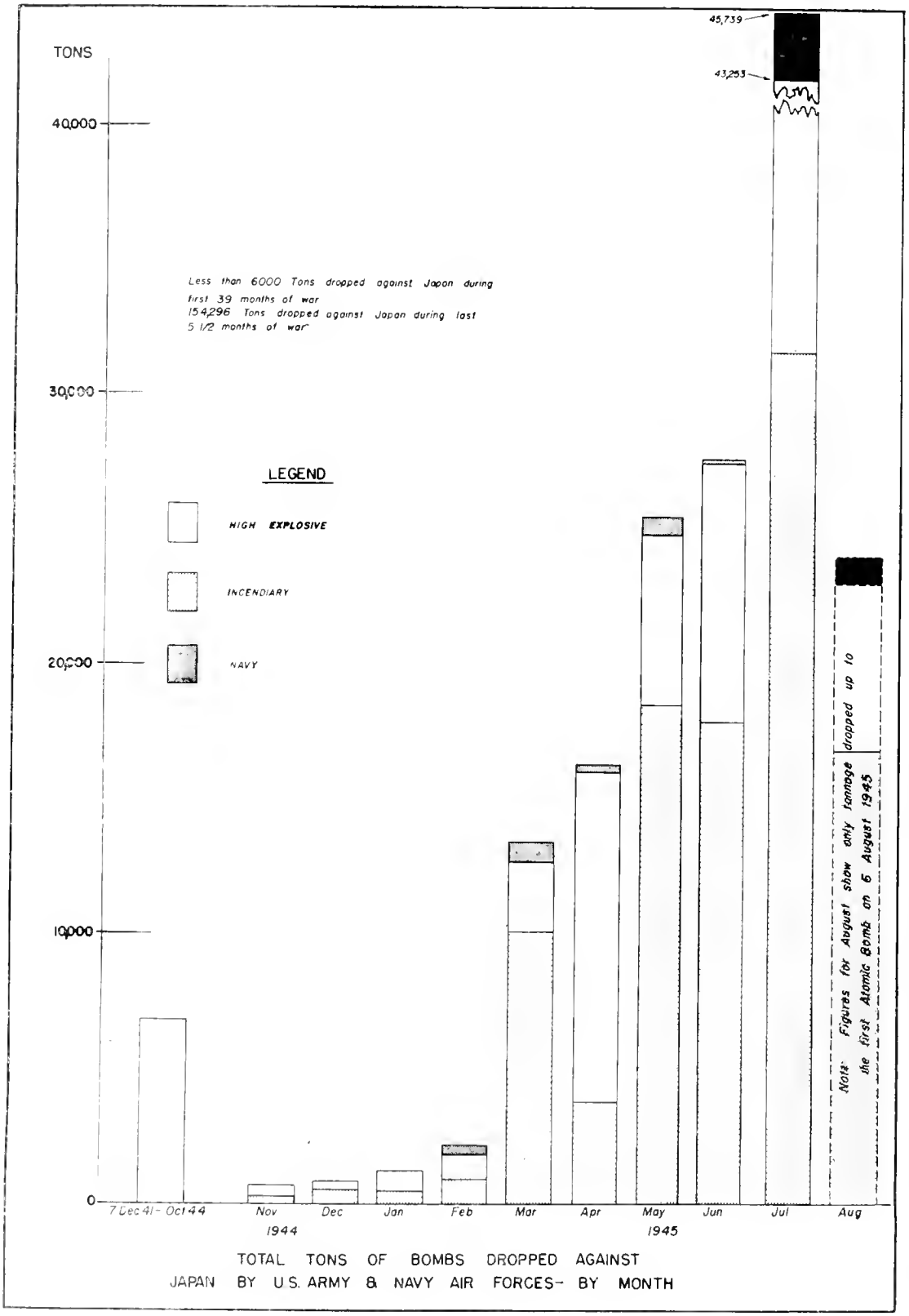
a. During the period immediately following World War I, Japanese newspapers and periodicals occasionally published pseudo-scientific and sensational articles on the nature of future air warfare which stressed bombing, biological warfare and gas attacks. Official interest and plans for civilian defense followed soon after.

b. From 1928 to 1937 civilian air defense in Japan was confined to "the six great cities" (Tokyo, Osaka, Nagoya, Kyoto, Yokohama and Kobe) and consisted of annual air-raid drills, (with emphasis on blackouts, gas defense and emergency first aid) supported by exhibits and demonstrations. During this period civilian air defense was not coordinated but consisted of separately organized plans centering in the six metropolitan areas noted above. An interesting record of a series of such drills held in Osaka on 4, 5, and 6 July 1928 was published in the Japan Times on 6 July. Front-page headline articles in this 1928 series covered such items as photographs of children and nurses in gas masks, a descriptive analysis of blackout regulations and first-aid drills, an army critique of the drills and an expression of strong official support for an extensive civilian air-defense program. The weakness of Japan's civilian air defense was not due to the lack of an early start.

c. With the promulgation of the national air-defense law of 5 April 1937 (which was closely related to the attack on China precipitated by Japan on 7 July 1937), civilian air defense became a nation-wide program under the jurisdiction of the Ministry of Home Affairs.

d. Thereafter, there was a marked rise in the importance of civilian air defense, but for this very reason it became the center of conflicts (1) among the various ministries on the national level, (2) between the prefectural and municipal offices, and (3) among bureaucrats, officials and politicians seeking personal power and prestige. There were overlapping plans and frequent reorganizations which created confusion and often blocked progress.

e. Two important volunteer civilian defense organizations were created in April 1939, the "Great Japan Air Defense Association" (Dai



TOTAL TONS OF BOMBS DROPPED AGAINST JAPAN BY U.S. ARMY & NAVY AIR FORCES - BY MONTH

Nippon Boku Kyokai) and the "Great Japan Fire Defense Association" (Dai Nippon Keibo Kyokai). A pointed rivalry developed between them which tended to add to the confusion. (Discussed in Exhibits B–3 and B–4.)

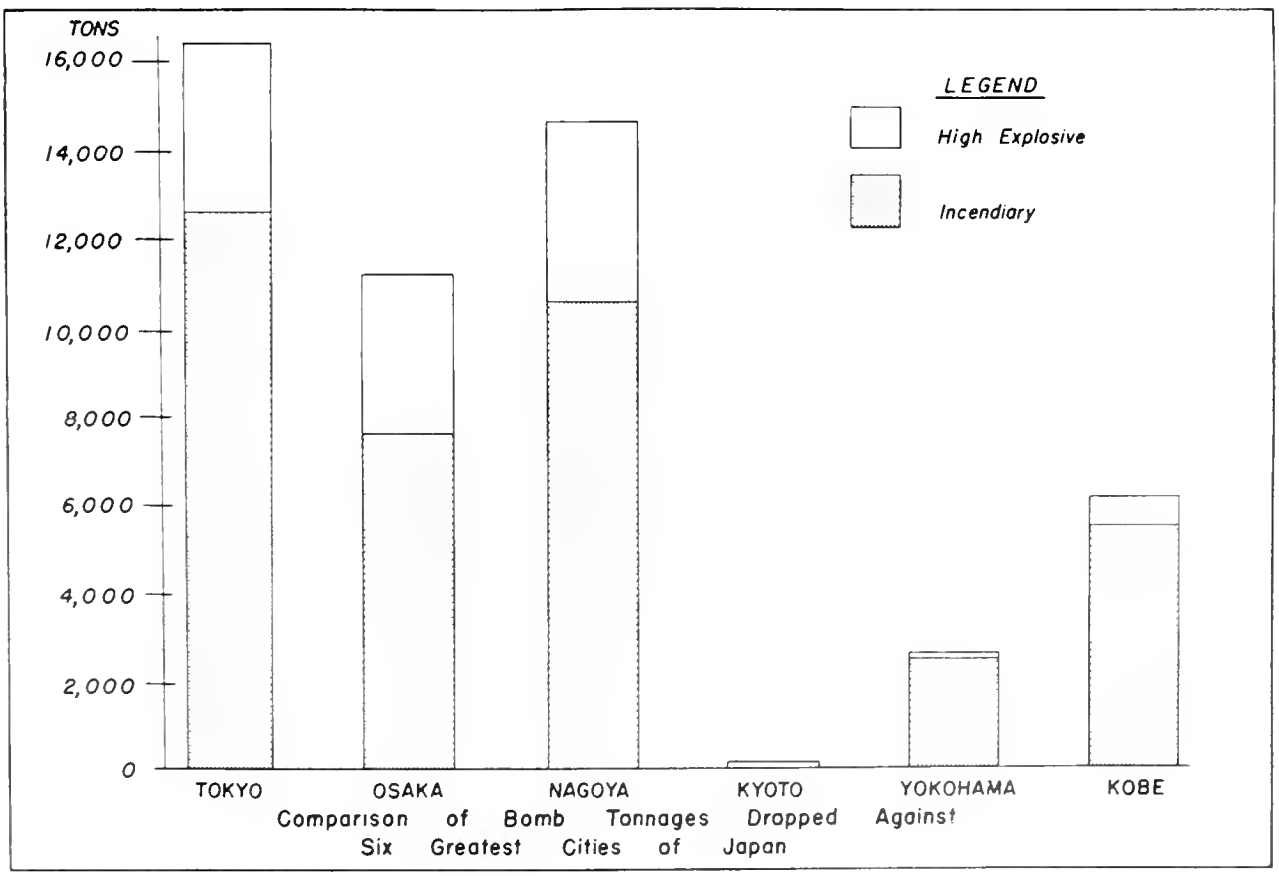
f. In order to unify the air-defense program an Air-Defense General Headquarters (Boku Sohombu) was established on 1 November 1943 under the supervision of the Minister of Home Affairs. This new agency acted as a clearing house for the coordination of the air-defense plans of the ministries and bureaus on the national level. It also issued directives to the air-defense headquarters established in each of the prefectures throughout Japan. As a result, coordination was somewhat improved but there was no reduction in the large, complex, bureaucratic structure that had developed around the air-defense program.

g. The primary achievement of the cumbersome legal and administrative structure that had developed by March 1945 (when the mass raids began), was to prepare a large number of directives, data and plans and to pass the responsibility for their execution to the prefectures and to the various volunteer civilian air-defense organizations.

4. Effect of Air Raids

a. In view of the official attitude and the inadequacy of the preparations, it was inevitable that mass air raids should find Japanese cities unprepared. The experience of most major Japanese cities follows much the same pattern as that of Osaka. In that city the first mass raid was by far the most devastating (although not the largest raid in terms of number of planes and bombs). There, as in practically every large city, the loss of life and property damage which resulted from the first mass raid was greater than that which resulted from later raids. This was due in part to the fact that the first mass raid burned out the most inflammable sections of the city, thus creating fire breaks which, later on, prevented the spread of fires started by subsequent raids and also offered places of safety to persons who would otherwise have been burned.

b. The casualties, the destruction of houses and other property damage (including the destruction of much of the air-defense equipment itself),



Comparison of Bomb Tonnages Dropped Against Six Greatest Cities of Japan

due to the first mass raid, so disrupted the air-defense program as to cause breakdowns in organization. The size and intensity of the raids thereafter were such that it was impossible to reorganize air defense on anything like an effective basis.

c. The casualties and property damage due to air raids by cities and prefectures (as reported by the Ministry of Home Affairs) are indicated in Exhibits A–1 and A–2.

d. For comparison with the Japanese record of loss of life and property damage, the American record of total bombs dropped against Japan by months is given in Exhibits A–3 and A–4, and is shown graphically on pages 18 and 19.

e. The Japanese experience differed from that of Germany in that the country was almost free of raids for three years and that virtually the entire force of the American air attack occurred in the last five and one-half months of the war.

f. It should be noted that American air attacks were far more widespread than was popularly supposed in the United States. Sixty-five of the leading cities of Japan were devastated, Kyoto being the only great city which remains intact. A strenuous effort was made to defend the largest cities; the medium-sized cities, being forced to give up their fire-fighting and other air-defense equipment to the largest cities, were unable to protect themselves against incendiary raids.

B. BASIC LAW ON CIVILIAN AIR DEFENSE

1. *Nature of Japanese Law as Related to Air Defense*

a. Although Japanese law was supposedly modeled along western lines, following the introduction of the modern form of government, in reality it contained much of the spirit of medieval Japan. The constitution, which was adopted in 1889, did not represent an agreement among the people of the country in respect to their basic law as does the Constitution of the United States. It was, rather, a statement that certain rights were granted by the emperor to the people of the country, the implication being that they should be grateful for this generosity and that these rights could be withdrawn if desired.

b. This spirit permeated Japanese law. It was a common practice in all Japanese schools, including universities, to have the emperor's picture hung behind velvet curtains which were parted only on those occasions when an imperial rescript was read, during which time all persons present bowed their heads in reverence. To the Japanese, laws were an expression of the will of the emperor, and officials (in particular police officials) were personal representatives of the emperor in carrying out the law; hence, the common citizen should show extreme respect for officials enforcing the law. The typical citizen of Japan paid lip service to the letter of the law even when he disapproved of it and intended to give it a minimum of observance. Formality, politeness, and respect on the part of the people and autocratic paternalism on the part of the government were thus characteristic of relationships under the law in Japan.

2. *Air-Defense Law*

a. Those facts are especially significant in evaluating the effect of the national law for civilian air defense. The extreme optimism of the government following the spectacular successes during the first year of the war, and the reluctance of the army to admit the realities of its position thereafter, led most Japanese to doubt the importance of air defense. A considerable number of those who were interviewed frankly stated that in their own volunteer organization air-defense drills were considered a nuisance and were carried out perfunctorily.

b. The national air-defense law was promulgated on 5 April 1937 (Exhibit C–1). Air defense, as defined in the law, covered "light control, camouflage, defense against fires and gas attacks, air-raid shelters and emergency rescue (and the necessary supervision thereof), communications and air-raid alarms, coordination with army and navy plans to prevent or minimize damage in case of air raids, and planning for equipment and resources necessary for the enforcement of air defense."

c. The primary effect of the law was to delegate the responsibility to the governors of the prefectures, and through them to the chiefs of the prefectural police departments and to such "local authorities" in towns and villages as were designated by the prefectural governor. The more important powers given to the governors were as follows:

(1) Non-governmental establishments of any sort whatsoever could be required to provide plans for air defense, to submit them for approval and to provide the supplies to implement them.

(2) Defense equipment could be requisitioned

from the managers or owners of any establishments.

(3) Owners of wooden buildings could be required to reconstruct or fireproof those buildings with the additional provision that, if the owner found it impossible to do so within the allotted time, public authorities could carry out the reconstruction and fireproofing without his consent.

(4) The construction of new buildings could be prohibited or restricted, and buildings could be demolished in order to prevent damage during air raids. The law specifically provided authority for the creation of "empty spaces" (fire breaks to prevent the spread of fire) and the demolition of buildings to create such fire breaks.

(5) Managers or owners of supplies could be ordered to transfer them to places of safety.

(6) Experts could be required to perform air-defense services at the discretion of the prefectural authorities; and those employed in any given enterprise could be required by the management to participate in the air-defense program thereof. Prefectural governors could make special appointments of executive officers for the supervision of air defense.

(7) Local officials could be required to act as air-defense officials.

(8) The equipment of any locality in a prefecture could be requisitioned for use in another locality.

(9) General authority was given for establishing and supervising all aspects of civilian air defense (defined and amplified in numerous subsequent ordinances).

3. *Revisions and Executive Regulations*

a. The Japanese language is extremely polite but exasperatingly indefinite, which holds true even for legal terminology. It was not uncommon to append an English or French version of a contract to the Japanese copy in order to make its meaning clear. Japanese basic laws, general in their language, required the issuance of further acts and executive regulations to give effect to the original decrees. The result was a legal maze. Because civilian air defense was a new concept, there being no precedent for it, the series of ordinances, directives and executive regulations issud by the Ministry of Home Affairs were unusually complex.

b. In addition to the general revision of the basic law, there were over two hundred special legal enactments and revisions, each covering a specific aspect of air defense (such as blackouts, insurance, communications, fireproofing, shipping and the like) not to mention the proclamations issued by prefectural offices. The general effect of these, however, was to expand and define the authority and responsibility of the prefectural governors.

4. *Air-Defense Law on the Prefectural Level*

a. The governors of the various prefectures used three primary channels for interpreting and enforcing the air-defense laws: (1) written and verbal instructions to officials immediately under them; (2) published plans indicating long-range and annual air-defense objectives; (3) public proclamations.

b. An air-defense headquarters was established by law in every prefecture (Exhibit C–4). No new appointments were made to staff it, however. The governor was also the chief of the headquarters, and the heads of the prefectural bureaus were likewise heads of the sections in the headquarters (in addition to their regular duties). Thus, in order to define and enforce air-defense law, the governor (as chief of air-defense headquarters) met with his subordinates (as officials in air-defense headquarters) to explain directly (1) his conception of air defense, (2) the measures that should be undertaken to insure it, and (3) the responsibilities of each of the pertinent sections for such measures.

c. The prefectural governors, with the assistance of their staffs, formulated long-range and annual plans which were published (classified as secret) for the guidance of section heads, air-defense experts and the leaders of volunteer organizations.

d. Governors also issued public notices and proclamations to the people urging compliance with the law or indicating the adoption of special provisions to meet emergencies. Such proclamations were often issued to bolster morale but they also contained specific emergency provision (Exhibit C–5).

e. Thus, on the prefectural level, the enforcement of air-defense law was more a matter of personal interpretation by the governor and of verbal orders to bureau chiefs and through the police department to local households and business establishments than it was a matter of written law.

f. Here again the effect was to pass the respon-

sibility for air defense from the governor to the police department and through the police department to the volunteer civilian air-defense organizations. It is significant that no new appointments were made for air-defense purposes. Since all officials were still carrying the full-time responsibility for their normal official work, only such extra time as could be spared was available for air-defense work, so that the bulk of the responsibility was necessarily passed on to the leaders of the local volunteer civilian air-defense organizations.

4. *Summary.* In summary, the legal foundations of air defense in Japan may be characterized as follows:

a. The basic law of 5 April 1937 defined the items to be covered and the authority to be exercised by the governors of the prefectures in establishing air defense but left the scope and intensity of the air-defense effort largely to their discretion.

b. A series of revisions, executive regulations, ordinances, and instructions were issued from the various levels of the Ministry of Home Affairs which gradually defined the meaning of the basic law. These represented an effort to intensify civilian air defense and to force civilian defense organizations, households and business enterprises to increase their air-defense equipment and training, but the effort was only partly successful.

c. The execution of the law on the prefectural level was a matter of (1) verbal instructions from the governor to the chiefs of the various departments and through the police department to volunteer civil organizations, (2) printed plans for air defense for the guidance of such officials and of the leaders of volunteer organizations and (3) the issuance of prefectural proclamations.

d. On the local level air-defense law was expressed primarily in terms of direct relationships between the police (who provided instructions, inspection and enforcement) and (1) volunteer civilian air-defense organization, (2) non-governmental establishments and (3) individual households.

e. Although the law strongly stressed the importance of planning, training and equipment, neither the national nor the prefectural governments provided sufficient funds to support them.

C. ADMINISTRATIVE ORGANIZATION FOR AIR DEFENSE IN JAPAN

1. *The Influence of the Army on Civilian Air Defense*

a. The civilian air-defense officials and prefectural governors who were interrogated emphasized the complete independence of civilian air defense from military control. On the prefectural and local levels this was largely true. Army officers attended air-defense demonstrations and occasionally offered criticism, but it was clearly understood that they had no authority over the civilian air-defense program.

b. On the national level, however, the army exercised a fundamental control, since it determined the framework within which the civilian air-defense program functioned.

c. Quite apart from their direct influence, military officers indirectly set the stage for civilian defense organization and planning. The army issued air-defense pamphlets, and all other pamphlets were subject to army inspection and approval. The army and the navy were the only sources from which information could be obtained regarding the nature and scope of prospective air attacks. Thus, although actual management of civilian defense was in the hands of civil authorities, basic assumptions which determined their decisions were provided by military authorities.

2. *The Five Stages in the Development of Civilian Air-Defense Organization*

a. From an administrative point of view the periods of development of air defense in Japan may be characterized as follows:

(1) From 1918 to 1928 there were occasional discussions between military and civilian officials regarding the significance of air defense as indicated by World War I. There were also semi-official articles in newspapers and periodicals dealing with problems of air defense. These articles were generally more sensational than scientific, but served to focus attention on the importance of the subject.

(2) In the years 1928 to 1937 the six great cities of Japan (Tokyo, Osaka, Nagoya, Kyoto, Yokohama, and Kobe) held annual air-raid drills, generally covering a period of three days each year, which were supported by propaganda, exhibits, demonstrations and lectures. There was no general national program; however, civilian

air-defense organizations cooperated exclusively with the military authorities but come under the jurisdiction of the six cities noted above.

(3) From 1937 to 1 November 1943 came the period of the growth and development of a national civilian air-defense program based on the national air-defense law of 5 April 1937. Due to the indefiniteness of that law, however, there were numerous jurisdictional disputes, not only among the several ministries seeking to exercise authority over the air-defense program but also among the bureaus in the prefectural governments and the volunteer civilian defense organizations on the national level which sprang up during this period. Administrative disputes were intensified by optimism regarding the outcome of the war, which caused civilian air defense to be regarded as a medium for establishing political power and prestige rather than as a serious national defense effort.

(4) November 1943 to March 1945 was a period during which an effort was made to unify the program under the Air Defense General Headquarters which was established by imperial decree on 1 November 1943. This law placed the primary responsibility in the hands of the Minister of Home Affairs and the prefectural governors (Exhibit B–1).

(5) From March 1945 to 15 August 1945 intensive mass air raids occurred during which the civilian air-defense program rapidly disintegrated and eventually collapsed. During this period it was shown that the actual coordination of air-defense operations (in so far as that was accomplished) was primarily a matter of relations between the prefectural police departments and the volunteer civilian defense organizations. It is significant that, when the raids came, the police and the civilian organizations operated with a large measure of independence, in many cases even contrary to the law, in order to coordinate action and meet emergencies.

b. The following discussion of administrative organization is confined to the period 1943–45, with special reference to the conditions which obtained at the beginning of the mass air raids in 1945.

3. *Air-Defense Organization on the National Level, at the Time of the Creation of Air-Defense General Headquarters*

The conditions which forced the creation of a national air-defense general headquarters were extremely complex. The leading municipalities which had had exclusive control over air defense until 1937 sought to retain a part of their authority. The adoption of the national air-defense law in 1937 precipitated a rash of plans in every ministry which could conceivably be concerned with air defense and started bitter rivalries among the bureaus within the ministries, particularly those in the Ministry of Home Affairs. This conflict of authority and overlapping of plans created an impossible administrative muddle.

4. *The "Great Japan Air-Defense Association" (Dai Nippon Boku Kyokai) and the "Great Japan Fire-Defense Association" (Dai Nippon Keibo Kyokai)*

Air-defense administration became still more confused by the creation of two volunteer air-defense organizations on a national level, organizations which were established in the same month (April 1939) with similar purposes:

b. The Great Japan Air-Defense Association (Exhibit B–3) was created by imperial decree upon the recommendation of the Minister of Home Affairs, with the concurrence of the army and the navy, under the official charter granted by the Ministry of Home Affairs. It was designed to give prestige to the civilian air-defense program, to act as a sponsoring organization with respect to training and propaganda and to provide financial assistance to volunteer civilian defense organizations. Expenditures were primarily for various types of air-defense equipment: gas masks, fire pumps, steel helmets, buckets, blackout curtains and emergency ambulances. They also frequently took the form of subsidizing the efforts of a local organization which needed additional funds to carry through an air-defense project. The association emphasized the need for air-defense training and was an active agent in this field on the prefectural and local levels, including printing and distributing of pamphlets on the various aspects of air defense, sponsoring air-defense schools and providing lecturers and experts for such instruction.

c. The Great Japan Fire-Defense Association (Exhibit B–4) represented a reorganization (in April 1939) of an association of volunteer fire departments originally established in July 1937 and was closely related to the auxiliary police and fire units (Keibodan), also established in 1939. The association performed the following functions:

(1) The distribution of pamphlets on fire fighting under the supervision of the prefectural police.

(2) The maintenance of centers for the repair of fire equipment of the auxiliary police and fire units. (This work centered in Tokyo and extended to the more important prefectures only.)

(3) The allocation of relief funds to members of the auxiliary police and fire units who were injured on duty, or to the families of those killed.

(4) The maintenance of an experimental laboratory for testing fire-fighting techniques and equipment.

(5) The instruction of selected members of the auxiliary police and fire units in a six-day course given twice a year in the Tokyo headquarters of the association.

(6) Instruction to volunteer civilian air-defense organizations in the various prefectures (in cooperation with the Great Japan Air-Defense Association) covering the fire-fighting aspects of civilian air defense.

d. There was a pointed rivalry between the two organizations, but the Great Japan Air-Defense Association rapidly took the lead, since it was accorded greater prestige and more financial support by the Ministry of Home Affairs. In spite of the resentment of the Great Japan Fire-Defense Association, a working agreement was reached by which the Fire-Defense Association assumed a minor role but retained its responsibility of training for fire fighting in collaboration with the Great Japan Air-Defense Association which assumed the authority for training in all other aspects of air-defense.

5. *The Administrative Organization of the Air-Defense General Headquarters (Boku Sohombu)*

a. The Air-Defense General Headquarters was created on 1 November 1943 by Imperial Decree No. 806 (Exhibit B–2) and was designed to coordinate conflicting plans and settle jurisdictional disputes. The Minister of Home Affairs, in addition to his other duties, was appointed director of the Air-Defense General Headquarters. This was the beginning of a peculiar dual control over air defense. The same official could issue orders through two separate channels. As Minister of Home Affairs, he issued instructions affecting air defense which could be handled through normal channels, and as Director of the Air-Defense General Headquarters he issued orders covering air-defense matters which could either not be handled through normal channels or which required special action to meet an emergency. This duality of control soon extended throughout the whole structure of the administration for air defense, not only within the bureaus in the headquarters but also within the prefectural governments.

b. There were four bureaus in Air-Defense General Headquarters, as follows:

(1) *The General Affairs Bureau* (*Somu Kyoku*), which had general supervisory functions and issued directives in respect to training and materiel procurement.

(2) *The Police Bureau* (*Keibo Kyoku*), which supervised both the police and fire aspects of air defense and was responsible for damage assessment.

(3) *The Engineering Bureau* (*Shisetsu Kyoku*), which laid broad plans for building demolition (to create fire breaks) and contained sections dealing with public and private property.

(4) *The Business and Planning Bureau* (*Gyomu Kyoku*), which dealt (a) with the needs of air-raid victims for food, clothing and medical supplies, (b) with rescue and first aid, and (c) with evacuation of threatened areas.

c. The chiefs of the General Affairs Bureau and the Business and Planning Bureau were full-time appointees. The chief of the Police Bureau, however, was also chief of the Police Bureau in the Ministry of Home Affairs, and the chief of the Engineering Bureau was also chief of the Public Works Bureau in the Ministry of Home Affairs. The two latter officials were thus in positions of dual authority similar to that of the Minister of Home Affairs.

d. The Air-Defense General Headquarters was never given sufficient power actually to integrate the air-defense program, that is, it was on a level with, not above, the other ministries. It, therefore, became a clearing house and planning center rather than an actual operational headquarters.

6. *Administrative Organization for Air Defense on the Prefectural Level*

a. The heart of the official administration of the air-defense program was to be found in the 47 prefectures of Japan. The national civilian air-defense law of 1937 indicated the character of the measures that were to be taken, but the responsibility for actually implementing the program was left to the prefectural governors with a

wide range of discretion as to how laws and directives should be carried into effect.

b. On the prefectural level there were three classes of administrative organization:

(1) Tokyo metropolitan district (Tokyo To) which occupied a position in Japan roughly comparable to that of the District of Columbia in the United States.

(2) Osaka and Kyoto metropolitan prefectures (Fu) which ranked somewhat higher than the others because of size and age, but differed from them only in that the chief of police was directly appointed by the emperor.

(3) The 44 remaining prefectures (Ken).

c. Tokyo metropolitan district differed from the other prefectures in the following respects:

(1) The government of the metropolitan district was newly organized (on 1 July 1943) and, therefore, lacked the authority and confidence of a long established administration.

(2) The Metropolitan Police Board of Tokyo, on the other hand, was an old, well established and ruthless organization which had direct access to the cabinet (in particular the Minister of Home Affairs) and did not recognize the authority of the governor of the Metropolitan District (Exhibits B–5 to B–9).

d. With those exceptions, all of the 47 prefectures were remarkably similar in organization.

e. The outstanding features of prefectural government, as it affected air defense, were as follows:

(1) In every prefecture (with the exception of Tokyo noted above) the governor was the central authority and issued directives to all prefectural bureau chiefs, including the chief of police. (Exhibit B–10.)

(2) All prefectures (including Tokyo) established an air-defense headquarters (similar to that shown in Exhibit B–11).

(3) In all prefectures, without exception, there was a dual administration in that the governor of the prefecture was also the director of the air-defense headquarters and the chiefs of the pertinent prefectural bureaus were also chiefs of the corresponding bureaus in that headquarters. No new officials were appointed by the prefectures for air-defense purposes, air defense being considered merely an "additional duty" of regular prefectural officials.

(4) In all prefectures the chief of police was in charge of the fire department, was responsible for the enforcement of air-defense regulations and assumed full authority for emergency actions during air raids.

f. In order to understand air defense in Japan (Exhibit B–12), it should be noted that there were no municipal police (all police departments being prefectural) and that the police exercised a degree of authority over the lives of individual citizens which would be intolerable in democratic countries. The police thus became the agency through which the government carried the air-defense program to the people. Other prefectural departments carried certain responsibilities with respect to air defense: the Department of Education was responsible for defense of schools and the evacuation of school children; the Economic Section was responsible for assembling emergency supplies of food and other necessities; the Communications Department was responsible for emergency communications. But in every prefecture the police department assumed authority for enforcing air-defense regulations, for the maintenance of order and for the supervision of actual air-defense operations during raids. When mass raids occurred and serious emergencies arose, the police did not hesitate to take any and all authority which was deemed necessary to handle the situation, even though it impinged upon the jurisdiction of other departments. Only when the police department had determined that the emergency was sufficiently abated were these responsibilities returned to those agencies which, by law, had the administrative authority. (Exhibits B–10, B–11 and B–12 covering the prefectural civilian air-defense organization of Hyogo prefecture illustrate the above.)

7. *Administrative Organization on the Local Level*

a. Administrative organization on the local level took two forms: (1) the ward organization in the large cities, and (2) the local organization in towns and villages.

b. Municipal officers cooperated with prefectural officials in civilian air defense (Exhibit B–13). The geographical subdivisions of the largest cities, constituting wards, as a general rule were identical with the areas under the jurisdiction of local police stations. There was thus a close connection between the local police in each ward and the local ward officials. It was, therefore, at this level that the influence of the police on the volunteer civilian defense organization was most directly exercised.

c. Since all of the police were prefectural

police and no city maintained its own municipal police system, the prefectural police department also exercised supervision over air-defense organizations in the towns and villages throughout the prefecture. If a town were sufficiently large, there was a local police station working in close cooperation with local municipal officials who were generally also officers in the volunteer air-defense organization of the town. The smaller towns in many cases had only one police officer, and the small farm villages generally had only a "headman" chosen by the village, who was visited at regular intervals by a police officer. The primary safeguard for local communities was the prefectural mobile police unit which could be called upon to meet a local emergency in any part of the prefecture.

8. *Summary*

a. From the beginning of the national program in 1937 to the end of the war, the administration of civilian air defense in Japan was seriously hampered by three factors:

(1) Bureaucratic confusion and conflict.

(2) A misconception of the nature and scope of air-defense requirements under saturation raid conditions.

(3) The failure of the government to allocate sufficient funds or full-time personnel for the purposes of air defense.

b. The air-defense general headquarters and other administrative bodies of Japan produced many plans on both national and prefectural levels: plans, based on false assumptions, which were conflicting and inadequate but which nevertheless directed a certain amount of effort into air-defense channels. The air-defense bureaus also performed useful functions during post-raid periods. The government did not, however, provide the leadership or the assistance for which it was responsible. When the mass raids began the full weight of air defense fell upon the people with such leadership as could be provided by the local police and by the officials of the local volunteer air-defense organization.

III. SPECIAL CIVILIAN DEFENSE AGENCIES

A. AUXILIARY POLICE AND FIRE UNITS (KEIBODAN)

1. *Introduction.* The history of Japan is filled with instances of earthquakes, catastrophic conflagrations and floods. This fact, coupled with the natural tendencies of the Japanese people toward communal endeavor, has found a natural outlet in the organization of volunteer emergency services. In the Tokugawa Era (1575–1865), the citizens of the growing cities of Japan, especially the merchants and property owners, banded together into volunteer fire-fighting groups (Shobogumi) to protect their lives and property. These groups continued to develop through the Meiji Era (1866–1912) and into modern times, resolving themselves into local entities such as the self-protection units (Bogodan) of Tokyo. In 1939, along with Japan's other preparations for war, it became obvious that some form of volunteer civilian-defense group would be necessary to supplement the regular police and fire services and to act as a link between the government and the people in air-raid protection. Consequently, the auxiliary police and fire units (Keibodan) were brought into being by a Ministry of Home Affairs' law, dated 24 January 1939. This law allowed considerable elasticity in the local organizations and, within a few months, each individual prefecture had published its own auxiliary police and fire unit law. It was only natural, therefore, that a substantial variation should be found in the organization, equipment and method of financing the units according to locale. The fundamentals, however, were nationwide. The people set about reconverting their existing forms of civilian emergency services into auxiliary police and fire units with enthusiasm, establishing rural and water auxiliary police and fire units (Suijo Keibodan) as well as regular city units. Although an official in the prefectural police department was generally appointed as nominal coordinator for the units throughout his prefecture, there was little active coordination above the level of cities or rural districts.

2. *Organization.* Although the table of organization of the auxiliary police and fire units showed considerable variations in different localities, the object of the units, i. e., the formation of an intermediate link between the police and the public for effective operation of air-raid protection functions, remained immutable. In order to add prestige to the organization, active members

of the unit were chosen on an honorary basis, primarily in consideration of their social standing and service to the community rather than on physical and mental qualifications and technical ability. Male residents of the community between the ages of 18 and 60 (in some prefectures the age group limits were altered) were eligible for membership. Although salaries were rarely paid to the officials or members of the units, special compensation laws provided benefits for those injured in the line of duty.

a. *Units* (*Keibodan*). Depending on the needs of the individual communities, units were usually located geographically in some previously zoned area, such as a police district or grammar school district. Headquarters were usually in some government building such as a school or police station. Memberships varied from 50 to 2,000 depending upon the size and importance of the unit's area and its table of organization.

b. *Subunits* (*Bundan*). In many localities, especially in those in which the units were comprised of many members and covered a large area, a division into subunits was effected. In these cases the subunit usually acted as the operating agency and the unit as the coordinator. There were usually five to 10 subunits in a unit with from 50 to 200 members. Headquarters were located in an appropriate structure in the area in which equipment could be stored and an office maintained. Whether actual operations were carried on from a unit or a subunit, the division into arms and squads was similar throughout the areas investigated. Usually an office force and a group of messengers were maintained at unit and subunit headquarters. Although there were local modifications, division into arms was generally as follows:

(1) *Fire Arm* (*Shobobu*). Approximately 40 percent of the active members of the unit (or subunit) were included in this arm. They were divided into squads, each squad having either a motorized gasoline pump or a large hand pump as its nucleus of equipment. (For a complete description and evaluation of this equipment, see the section of this report entitled "Fire Services.") In all cases, the duty of this arm was exclusively the extinguishing of fires. It, more than any other, was a direct outgrowth of the volunteer fire groups of former days. The personnel was usually the younger and stronger members of the unit. In certain cases where the introduction of prefectural fire services was a fairly recent innovation, an active rivalry, occasionally growing into heated competition, sometimes developed, although in most cases cooperation was the rule.

(2) *Guard Arm* (*Keibibu*). About 25 percent of the active membership was devoted to this arm. As opposed to the fire arm, it was usually broken down into squads based on specific duties rather than equipment. Again, considerable fluctuation was found in varying communities, but the usual breakdown was into approximately eight squads. The arm was equipped with those tools, such as shovels, picks, axes, bicycles, ropes and bells which were necessary for its successful operation.

(a) *Political Thought Squad* (*Chianhan*). Although the prescribed duties of this squad were to quash rumors and defeatist thoughts, and to report suspected disloyal activities to the police, its importance, especially under actual raid conditions, was negligible.

(b) *Traffic Control Squad* (*Kotsu Seirihan*). During air raids this squad controlled traffic, directed drivers and pedestrians to shelter and maintained order at incidents occurring in the area.

(c) *Unexploded Bomb Squad* (*Fuhatsu Shorihan*). This squad was responsible for immediate evacuation of personnel from areas rendered dangerous by unexploded bombs and for the cordonning off of such areas.

(d) *Observation Squad* (*Kanshihan*). At the time of the sounding of the "alert" warning, members of this squad mounted to high points in the area and, upon the approach of enemy planes, rang bells and special clackers as a final warning for members of the community to seek shelter. They also spotted fires during raids, reporting such incidents to unit or subunit headquarters.

(e) *Guide Squad* (*Yudohan*). Members of this squad were responsible for the safe movement to shelter of previously designated helpless individuals such as children, the aged and the ill. Prior to the arrival on the scene of the regular rescue service, the guard rescue unit (Keibitai), this squad also attempted to rescue persons trapped in buildings.

(f) *Alarm Squad* (*Keihohan*). This squad was responsible for all citizens' receiving all "alerts" and "alarms." Special attention was paid to the deaf and those living in areas where reception of normal means of warning might be impaired. The usual method of dissemination was to send bicy

clists through the streets, calling out the appropriate signal.

(g) *Light Control Squad* (*Toka Kanseihan*). This squad patrolled the area directing the dimout at sundown and blackouts at the appropriate air-raid warnings.

(h) *Labor Squad* (*Kosakuhan*). This squad participated in post-raid clearance and all other labor projects caused by raids or other calamities. In certain localities they also acted as laborers for army units deactivating unexploded bombs.

(3) *Emergency Medical and Gas Decontamination Arm.* Approximately 35 percent of the members of the unit were engaged in the work of this arm. As a gas-protection agency, although the best the individual Japanese community had to offer, equipment and training were of a very rudimentary nature. (For a full description of the decontamination services contained in this arm, see the section of this report entitled "Gas Protection Service.") Although most units and subunits made it a policy to have at least one doctor in each medical arm, equipment was usually insufficient for any medical activity other than immediate first aid and transfer to higher echelons of emergency medical service. In some units, however, where the subunit system was in effect, the emergency medical arm would be attached to unit headquarters rather than to the subunit, and an emergency first-aid post was set up at unit headquarters. Equipment consisted of stretchers and varying amounts of first-aid medicine and instruments. Full coverage of this equipment will be found in the section of this report entitled "Emergency Medical Services."

3. *Officials.* In keeping with the fundamental theory of developing the auxiliary police and fire unit as an honorary organization, it was usually the practice to choose officials on grounds of personal character and service to the community, rather than on those of technical ability. In some cases it was found necessary to go through all the higher officials down to the arm leaders before a person competent to supply information on the activities of the unit could be found.

a. *Unit Officials.* The term of office of the unit officials was a factor which varied from city to city, ranging from 2 years to a lifetime appointment, terminated only by resignation, death or removal by the governor. Also, the method of choosing the leader of the unit varied. In most regions he was appointed by the local chief of police, sometimes on the advice of respected members of the community, sometimes through recommendation of the subunit leaders. In other cases, he was elected by popular vote of the members of the unit and then approved by the police chief. The system of choosing assistant unit leaders, of whom there were from one to five, included all the above methods with the addition, in certain locations, of the plan of having the leader appoint his assistants directly. In most communities the officials received no salary, although in certain places they received a token remuneration. Duties of officials were the leadership of the unit in all its functions and the maintenance of liaison with police officials.

b. *Subunit Officials.* The choosing of subunit officials, leaders and assistant leaders was based on much the same system as that for unit officials, the method again varying with the locality. Some were chosen by local police officials, others by unit leaders, and still others by popular vote of the subunit members. Their terms of office were usually the same as those of the unit officials, and they also usually received no salaries. Arm leaders were usually appointed by higher subunit or unit officers and were responsible for the operations of their respective arms. Under the subunit system, although the actual arm leaders were placed under subunit control, the usual practice was for some official on the unit level, usually an assistant leader or an over-all arm leader, to coordinate the activities of all the corresponding arms, for example, all the fire arms, of the entire unit. There were also assistant arm leaders, squad leaders, and, occasionally, assistant squad leaders, usually selected through appointment by higher subunit or unit officers.

4. *Operations.* The air-raid functions of the auxiliary police and fire units were carried out in constant liaison with the regular police and fire services and under their supervision. Headquarters were open 24 hours a day on a rotating basis, and the members mobilized at the sounding of the "alert." Upon the spread of an incident beyond the capabilities of the individual householder or the combined efforts of the neighborhood group (Tonari Gumi) or neighborhood air-defense group (Bokugun), assistance would be dispatched from the unit, or, in cases of the subunit system, from the subunit. This assistance would be dispatched under one of three stimuli: aid could be requested by the individual or neighborhood group; it could be sent directly from the unit or subunit without a request from the sub-

ject in distress; it could be sent at the order of the local police chief. In any event, all incidents and movements of the unit and subunit were reported to the police with the least practicable delay and any operation of the unit or of any of its officials could be overruled by the police authorities. In the case of a number of incidents occurring simultaneously within one subunit's area, with other subunits not being especially occupied, the unit officials would order the personnel and equipment of one subunit to go to the assistance of its neighbor. In case of extreme activity in one unit, assistance would be sent from other units in the city either voluntarily, upon request of unit leaders, or at the order of the police.

5. *Training.* For activities of the auxiliary police and fire units, which were merely supplementary to local services already in existence (such as fire-fighting and medical services), training was given by local authorities most competent in those fields. For more specialized wartime duties, such as gas decontamination, national classes were organized for representatives from each prefecture and they, upon returning to their prefectures, called training meetings of high auxiliary police and fire unit officials. These officials would then return to their own units and impart this training information to other officials and members involved. The units themselves, in fulfilling their original purpose of forming a link between the police and the people and acting as a model for air-raid protection activities, staged demonstrations for the benefit of neighborhood group and neighborhood air-defense group leaders and for the general public.

6. *Funds.* Although the national government set aside a certain appropriation for civilian air defense, little, if any, was received by the auxiliary police and fire units. A certain amount of equipment was supplied the units both by prefectural and municipal governments, but many of the units relied entirely upon public subscription for the purchase of material. As a natural consequence, the units whose areas included the more wealthy districts were usually far better equipped than their less fortunate counterparts.

7. *Comments.* a. The importance of the auxiliary police and fire units in Japanese civilian defense becomes more evident when one realizes that only large cities in the Japanese home islands had regular fire departments and that all other places were entirely dependent upon these units for regular fire protection as well as air-raid-defense service. Although it was impossible for any type of supplementary civilian defense agency to continue total operations in the face of the type of saturation raids which were visited upon Japan by the AAF, the auxiliary police and fire units acted as the crux of the voluntary civilian defense forces and performed admirably during the war. It must be remembered that these units had a solid foundation established by years of peacetime experience in municipal emergencies, such as earthquakes, floods, fires and famine.

b. Furthermore, the characteristic nature of the Japanese people, their inborn obedience and spirit of cooperation, caused them to support the units whole-heartedly, and the prestige afforded by membership in the unit served to keep morale in the organization at a high point. Also, from the standpoint of air-raid service, the division into arms and squads which covered virtually all the necessary emergency services and were dispatched from a single point in a relatively small area, facilitated the prompt operation of emergency services.

c. Even though the occasional lack of intelligent leadership must have hampered early operations, the fact that many of these units in the most devastatingly levelled areas of Japan were still in operation at the end of the war, fulfilling their peacetime fire service, is ample testimony of the ability of these organizations to take tremendous losses and still pursue their duties. Although this might have been due in part to the fatalistic and unselfish attitude of the members, the self-sufficiency of each of the units must also be considered a major factor. The lack of a strong national, or even prefectural, coordinating agency hindered uniform and thorough training. This lack, however, engendered independent unit action and eliminated the confusion which might have been caused by a dependence upon a central authority for operational orders.

d. In spite of these merits, however, improvement along certain lines would have greatly increased the units' efficiency. In some places the training and equipment of the units were incomplete. This was because planning had failed to contemplate the effect of raids of saturation proportions. Thus, when they came, disruption of communications and lack of material and personnel limited the capabilities of these units. It was impossible for them to secure replacements and

reinforcements. Furthermore, officials, especially unit and subunit leaders, were chosen on an honorary basis and for their community popularity rather than for technical or physical ability. Although this gave the units prestige and "face," such leaders delayed prompt action because they were incapable of making competent decisions without first discussing them with their subordinates.

e. The value of an organization in any plan of air-raid protection is evident, but it is obvious that such an organization in a western nation would require more competent leaders and stronger national and local coordination.

B. NEIGHBORHOOD GROUPS (TONARI GUMI), BLOCK ASSOCIATIONS (CHOKAI), FEDERATED BLOCK ASSOCIATIONS (RENGO CHOKAI)

1. *Introduction.* Japan has long been forced to look upon cooperative communal endeavor as a necessity in any national effort. With the growth of great cities and the resultant density of populations, the amplification and greater use of neighborhood groups became of increasing importance. During the reformation of the Meiji Era (1865–1911), sanitation groups (Eisei Kumiai) were established, especially in cities and towns. They were based on the feudalistic five-man groups (Gonin Kumi) composed of the heads of five families, which acted as liaison agents between the feudal lords (Daimyo) and the people. Although the sanitation group was charged primarily with the health and living conditions of persons living in its area, its operations gradually developed and came to include such varied functions as supervision of street lighting and hiring of a neighborhood watchman. About 1932, following the lead of the capital city of Tokyo, the sanitation groups throughout Japan changed their names to Block Associations (Chokai), and the area of entire towns was divided among these groups. At about the same time, another ancient organization called "Neighbors' Mutual Assistance" (Rimpo) broadened its scope and became known as the Neighborhood Group (Tonari Gumi). Continuing to follow Tokyo's lead, membership in these two organizations ceased to be a voluntary matter and became compulsory, and the neighborhood group found itself subordinated to the block association. Local governmental agencies, especially the police, soon discovered that this system could greatly facilitate the complete control over the people which Japan's political course then demanded. Each individual was made responsible to the group and had his every action scrutinized and criticized by the group. The resultant uniformity of popular thought and action was not surprising, especially in a population so lacking in individuality as that of Japan. As Japan's aggressive policy brought her inevitably closer to total war, a strong civilian defense agency to bring home to the people the necessity of firm household and neighborhood air defense became indispensible, and Japan's ruling group was not long in realizing that in the neighborhood groups it had just the agency it sought. Consequently, about 1938, with the encouragement of the national government, the prefectures established the Neighborhood Group, Block Association and, in some cases, the Federated Block Association (Rengo Chokai) as government-sponsored citizens' organizations and began to use them as agencies for air defense, rationing, training, intelligence and other wartime services.

Neighborhood Groups (Tonari Gumi)

2. *Organization.* It must be understood that the residents of any given area had no choice in joining the neighborhood group and its affiliate agencies. Residence in the area was sufficient to make membership mandatory. Inasmuch as these agencies were organized on a prefectural rather than a national basis, the organizational variations which existed in different localities make a general description inapplicable. Usually from 10 to 20 households formed an individual neighborhood group. Meetings were held once a month and emergency meetings when necessary, the meeting place shifting from one member's house to the next. In some areas dues were collected on an ability-to-pay basis; in others no dues were collected at all. As the war progressed, one of the main objects of these meetings was training and the dissemination of civilian-defense information, the neighborhood group being considered the fundamental basis of air-raid protection, with one member of each household specially designated for air-raid duties therein.

a. *Officials.* Officials of the neighborhood groups served without salary, the honor of serving the neighborhood being considered sufficient. With the exception of the air-raid-defense leader, concerning whom see below, the elders of the neighborhood were generally sought as leaders.

(1) *Leader.* Although the method of choosing a leader varied among the groups, generally he was elected by the group as a whole, each household voting as one unit. The usual term of office was 2 years, although this, too, was a varying factor. The duties of the leader were to pass on information to the people, to lead them in such activities as rationing and savings, to represent them in the block association and to supervise air-raid activities (in those groups having no air-raid-defense leader and where the air-raid-defense group was not present).

(2) *Assistant Leader.* An assistant leader to aid and replace the leader in case of his absence was also usually elected in the same manner as the leader and for the same term.

(3) *Air-Raid-Defense Leader.* In cases where the leader of the neighborhood group was too old or was physically incapable of active leadership in an air raid, it became obvious that a special air-raid-defense leader would be necessary. In some cases this task would devolve on the assistant leader, in others a special air-raid-defense leader would be appointed. This man was similar in many ways to the American air-raid warden in his duties and actions. Depending on the community, he was either elected by the group or appointed by the leader. He received a certain amount of air-raid-defense training from the police and from the auxiliary police and fire units (Keibodan). He supervised the light control of his area, assured the dissemination of air-raid warnings to all members of his group and attempted to control the bombing incident until the arrival of higher echelons of the emergency services. In certain areas, such as Tokyo, a neighborhood air-defense group (Bokugun) was established parallel to the neighborhood group to handle the air-defense functions of the group exclusively, leaving the regular group organization to handle such matters as rationing and savings. In this case the air-raid-defense leader became the leader of the neighborhood air-defense group. Although all able-bodied individuals were under obligation to serve the group at the incident, this air-defense leader usually specified certain individuals for special jobs, for example, hand pump operators, water carriers.

b. *Equipment.* It was the aim of the prefectures to equip each of their neighborhood groups with a two-man hand pump, specially manufactured for use of the groups. The shortage of materials, however, did not permit this and many groups were forced to rely upon buckets and static water for extinguishing fires. In cases where pumps were available, they were sometimes issued by the prefecture, sometimes by the city, and sometimes bought through contributions of members of the group. As a consequence, the neighborhood groups whose area embraced the more wealthy sections were better equipped than the average. In certain cases, a small amount of emergency first-aid equipment was on hand, but this, like buckets, fire beaters, water crocks and other fire-fighting equipment, was more often found in the individual home than in the group.

3. *Operations.* Upon the occurrence of an incident in the group's area, all able-bodied personnel joined in trying to bring it under control. If the members of the group, assisted by neighbors, were unable to control it, help was solicited from the nearest auxiliary police and fire unit or subunit or from the regular police and fire departments. In cases where assistance was not forthcoming from any of those groups, help could be requested from neighboring groups or from the block association, provided that the block association was one of those which had an air-raid-defense arm.

4. *Comments.* The adaptation of the neighborhood group system to civilian defense functions by the Japanese was a logical step in the evolution of these organizations which became the very foundation of the Japanese air-raid-protection forces. Here was the Japanese expression of "self-protection"—a group fighting for the protection of its homes before the arrival of larger and better-equipped forces. It offered the great advantage of having a working organization with a responsible leader on the scene of a bombing incident a few minutes after its inception, the time when prompt action was most valuable. Further, it formed an efficient and orderly channel for the dissemination of training, information and equipment from municipal, prefectural and national sources down to each individual household. Necessity had long conditioned the Japanese people to work cooperatively and in unquestioning obedience to orders. This undoubtedly was an important factor in the comparative success of the neighborhood groups. Its basic foundation of cooperation, coupled with the decided tendencies of the Japanese people in that direction, kept morale and efficiency high, and the coming of war found this existing organization ready to assume the emergency duties which the

conflict thrust upon it. On the debit side, as in most Japanese civilian-defense agencies, the most thorough cooperation and efficient action was insufficient to cope with air raids of saturation proportions. The number of simultaneous incidents, together with the casualties and confusion which were the natural results of the raids from March 1945 to the end of the war, overtaxed the capabilities of these services, but it is logical to assume that, without this group, loss of life and property would have been far greater.

Block Associations (Chokai)

5. *Organization.* The name "Block Association" was in many cases a misnomer since the area of the association was usually larger than a city block, although in some cases a single large apartment house might contain a block association. Since the area of the block association usually contained 10 to 20 neighborhood groups, it was, of course, impossible for all the people living in the area to attend each meeting. Consequently, a council, composed of the leaders of each neighborhood group of the association, met periodically to carry out the association's business. This was usually to channel equipment and information from the local government to the people of their groups. In certain cases, however, there were active operations carried out in the block associations, both civilian defense and other. In those cases the activities of the association were carried on by sections, one of the sections being an air-defense section. In some areas this air-defense section of the block association was equipped with a number of neighborhood-group-type hand pumps as well as some others of a larger capacity. In rural areas, a rural block association (Buraknkai) corresponded to the city organization.

a. *Officials.* Officials of the block associations, like those of the neighborhood groups, received no salaries. The usual term of office was 2 years.

(1) *Leader.* The leader was chosen by vote of the council, each neighborhood group leader having one vote. In certain communities a neighborhood group leader could not become a block association leader, although in other communities this was encouraged. The block association leader guided the operations of his group in all fields and represented the block association in the federated block association, if such a body were in existence. There was also an assistant leader, usually chosen in the same manner as the leader, whose duty it was to assist the leader in his executive and administrative functions and to replace him in case of his absence.

(2) *Air-Defense Section Leader.* In block associations which maintained active functions a division was usually made into sections, such as a taxation section, a savings section and a women's section, each section having a leader and one or two active members. In localities where these divisions took place, one of the sections would invariably be an air-defense section the leader of which was usually selected by the block association leader for his qualifications in air-raid-defense matters. He was sometimes a member of an auxiliary police and fire unit. Although in most cases the only duty of this section was to maintain liaison between the neighborhood groups and higher authority in air-defense matters, in some areas it also maintained an active air-raid-protection service, with hand pumps supplementing those of the neighborhood groups and personnel assigned to specific air-raid duties.

6. *Operations.* If an air-defense section had been organized, personnel and equipment would be dispatched to incidents in the association's area, either upon the request of neighborhood groups in need or assistance or upon the association's own volition. It should be emphasized, however, that cases in which the block association operated as an active air-raid-defense agency were few, and, for the most part, its activities were confined to passing on equipment and information to neighborhood groups and individual households.

7. *Summary.* The existence of an active air-raid-protection agency in the block association seems entirely superfluous in view of the neighborhood groups' air-raid-defense functions and the activities of the auxiliary police and fire units. From the standpoint of supply and intelligence, as well as supervision and training, however, the block association formed an important link in the system of making the neighborhood group the foundation of air defense. To distribute equipment to the thousands of neighborhood groups in a single ward or to pass on information to them without an intermediary would have entailed considerable administrative detail, subject to serious omissions, but the interjecting of such organizations as the block association and the federated block association made the distribution a relatively simple matter. Furthermore, the increase in efficiency in having the neighborhood

groups responsible to their respective block associations rather than to the city is evident.

Federated Block Associations (Rengo Chokai)

8. *Organization.* The basic thought behind the organization of the federated block associations was to establish an intermediate step between the block association and the ward. It was to the block association what the block association was to the neighborhood group. Approximately 20 block association leaders would gather for purposes of facilitating administration of and distribution to the block associations. It should be noted, however, that in certain localities, noticeably Tokyo, the federated block association was not formally recognized.

a. *Officials.* The officials of the federated block association received no salary and served varying terms of up to 2 years.

(1) *Leader.* The leader was selected by the council of block association leaders which formed the executive organ of the federated block association, although he himself was not necessarily of their number. He had charge of administration of the group and was generally a highly respected member of the community. He had an assistant, usually chosen in the same manner as he himself, to help him in his functions and to replace him in case of absence.

(2) *Air-Defense Section.* There was usually an air-raid-defense section organized for the distribution of equipment and dissemination of information to the block associations. It performed no active air-raid-defense functions. Its leader was usually appointed by the association leader.

9. *Operations.* The operations of the federated block association—collection of taxes, management of rationing, distribution of air-raid-defense equipment—were merely expanded and consolidated functions of the block associations and a convenient link between the block association and the ward.

10. *Summary.* The role of the federated block association in the chain of neighborhood group elements was relatively unimportant and could have been eliminated without serious consequences. It did, however, facilitate official control of the everyday life of the people. And it was this in which the government of the moment was primarily interested.

IV. ORGANIZATION AND OPERATION OF JAPANESE CIVILIAN DEFENSE

A. AIR-RAID WARNING

1. *Introduction.* The subject of air-raid warning embraces a discussion of the agencies by which enemy aircraft were detected, of the channels through which and the headquarters to which this information was passed, of the authority to direct the dissemination of air-raid warnings and, finally, of the means and manner by which the probable areas of attack were warned of the danger of enemy air activity. The basic principle of the Japanese air-raid warning system was that the military was responsible for consolidating and evaluating information of enemy aircraft and directing civilian authorities to announce warnings, but that civilian authorities were responsible for the transmission of air-raid signals to the civilian populace. The chart on page 34 gives a quick résumé of the system which is described hereafter in detail.

Detection

2. *Sources of Detection.* Information of the flight of enemy aircraft was obtained from the following sources (given in their probable sequence of detection):

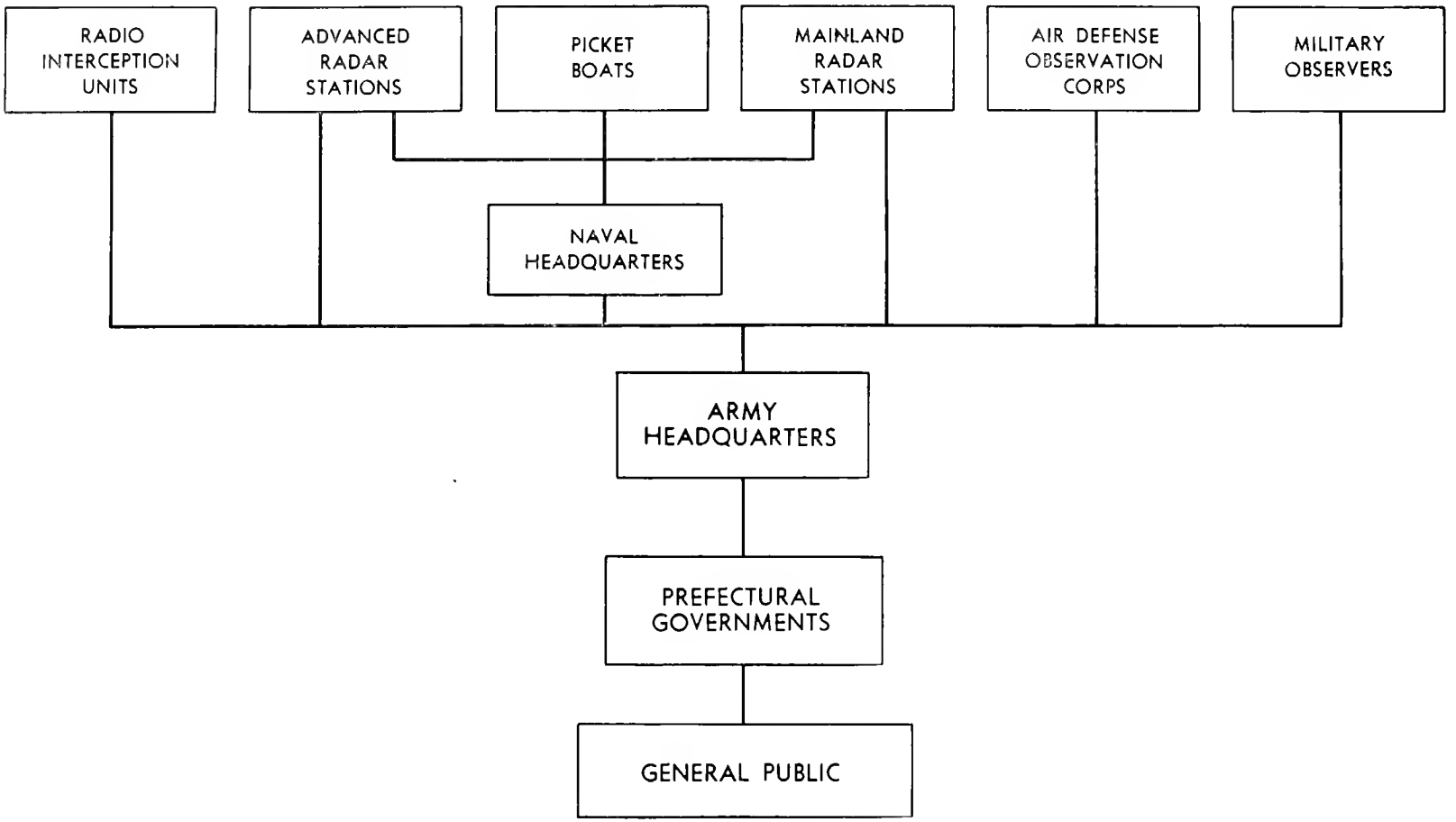
a. *Radio Interception.* As American aircraft were preparing at their bases for attack, the crews made a check of plane-ground radio communication equipment. By use of short-wave radio interception devices the Japanese were able to detect this conversation and could evaluate such information to the point that they could estimate the size of the attacking force and could determine the probable day and hour of attack within a margin of error not greater than 4 to 7 hours.

b. *Advance Radar Stations.* Radar installations were located on advanced island posts as far as Chichi Jima and Haha Jima. This method of detection usually gave the first indication of the general direction of the flight, gave some idea of its strength and, at times, the approximate altitude. Information thus obtained was sent back to army and navy bases by radio.

c. *Picket Boats.* The navy operated picket boats off the Japanese mainland to a distance of 80 to 1,000 miles for detection of enemy aircraft. Only a few of these boats were naval craft specially designed for this duty. In the main private fishing boats, ranging from 17 to 250 tons were

AIR RAID WARNING

DETECTION AGENCIES AND CHANNELS OF INFORMATION AND WARNING



requisitioned from their owners for that purpose. Generally, detection of enemy aircraft by these boats was accomplished by visual means, only the larger boats being equipped with radar. Information secured by these craft was radioed back to naval bases from which it was communicated to army headquarters.

d. *Mainland Radar Installations.* The mainland of Japan was enclosed and interspersed with a series of radar stations and radar beams. The army radar installations were operated by air intelligence battalions which contained nine radar companies, each of approximately 350 men. Coastal radar stations picked up flights as far distant as 155 miles from the shore, although low-flying planes often came in without being detected. Information obtained by this service was communicated to army and navy headquarters, between which constant liaison was maintained, and was broadcast to all military installations.

e. *Air-Defense Observation Corps (Boku Kanshitai).* A series of static observation posts was established throughout Japan under the sponsorship of the Minister of Home Affairs and not as a military unit. Sites for these posts were selected by the army so as to insure adequate coverage and were then referred to the governor of the appropriate prefecture for organization and operation by civilian personnel. Enemy information obtained by these posts was telephoned to a central post headquarters and from there relayed to a designated army headquarters. The observation posts were equipped with binoculars, compasses, telephones and plans of the immediate vicinity to determine direction of flight. In some prefectures the observers were paid for actual time on duty, and personnel in some localities was uniformed, although that was not prescribed nationally for this service.

f. *Military Observers.* Because the turnover of civilian personnel in the air-defense observation corps prevented maintenance of adequately trained observers on duty at all times, the most important observation posts were manned by military personnel. These posts were operated by the air intelligence battalions referred to in paragraph 2d above and included, in addition to the radar units, two observation companies, each composed of ten observation posts with from 7 to 12 men to a post. Information from these posts, as well as that received by observers at anti-aircraft batteries and other military units, was telephoned immediately to army headquarters.

Air-Raid Signals and Warnings

3. *Authority.* As is indicated in the introduction to this subject, no air-raid warning signal could be sounded except upon express authority of the army (the navy, in and around naval bases) even though enemy raiders might have been overhead. Laws were also promulgated which prohibited the sounding of any whistles or sirens or any other act during the period of an air raid which might cause confusion with the authorized signals. As the various agencies of detection communicated information of enemy aircraft to local army headquarters, the data were plotted in the operations room on a large map of the area of that particular army. This headquarters was responsible for alerting the active military forces, directing their operations and warning the civilian populace. From all the information available to him, the commander of the operations room then decided: (1) whether air-raid signals should be directed, and, if he decided in the affirmative, (2) within what areas signals should be given, and (3) at what time prior to the estimated arrival of the planes the signals should be sounded. This procedure underwent many changes as the war went on. In the early stages, air-raid signals were sounded throughout an entire army district area when one or more planes of any type were detected as far distant as Wake Island. As enemy forces moved closer to Japan and the frequency of raids increased, the practice of announcing warnings to the public on such premises kept the country in a state of almost permanent alert with a deleterious effect on the morale of the people and on production figures. Measures were then adopted to remedy this situation. As to (1) above, it was decided that signals should not be given upon the detection of one plane or even of a few scattered planes, but only upon the detection of an organized flight of bombers or fighters. This practice was continued until the dropping of the atomic bombs, after which the original practice of sounding alarms upon detection of even one plane was resumed. Regarding (2) above, each army district area was broken up into warning zones which grouped certain prefectures together on a basis of target probability and convenience in dissemination of warnings. If necessary, these zones could be further sub-divided, using each

SCHEDULE OF AIR-RAID WARNINGS

[As promulgated by Supreme Air Defense Headquarters]

	Siren	Bells	Flags and Sleeves	Lights	Oral	Placards
Alert	Long steady note of 1 minute duration (long steady note of 3 minutes duration).[1]	One gong followed by 2 quick gongs.		Three shielded red lights displayed in a vertical line.	"Alert ordered" called out repeatedly.	"Under alert order" written in white on a background of blue.
Alarm	Five blasts of 4 seconds each with 8-second interva's (ten blasts of 4 seconds each with intervals of 8 seconds).[1]	One gong followed by 4 quick gongs.		Lights blinked on and off for two minutes and then extinguished.	"Alarm ordered" called out repeatedly.	"Under alarm order" written in white on a background of red.
Release from Alarm	Long steady note of 1 minute duration (long, steady note of 3 minutes duration).[1]	One gong followed by 2 quick gongs.		Three shielded red lights displayed in a vertical line.	"Alarm released" called out repeatedly.	Take down "alarm" warning and put up "alert" warning.
Release from Alert	This signal was not prescribed by national decree. In some areas the army had prescribed such signal, which was announced by two blasts of 30 seconds each with 8-second intervals.	Not prescribed by national decree. Used in some areas thus: one gong followed by 4 quick gongs (differing from the "alarm" in that the 4 gongs, following the first, had longer intervals).	Flags and streamers taken down.	Lights extinguished.	"Alert released" called out repeatedly.	Take down placard.

[1] Denotes signal prescribed up to 1 May 1945.

prefecture as a sub-zone. This procedure narrowed down the area to be warned and permitted normal activities in those localities which were not considered probable targets. Concerning (3) preceding, it was decided to forego the sounding of public signals until there was just enough time to mobilize civilian defense forces, effect a blackout, take shelter and accomplish other preliminary steps and passive defense measures as were deemed necessary. The anticipated time warning available upon the sounding of each signal is described below under the discussion of the "alert" and "alarm" signals. The army decision to announce signals was then communicated to the prefectural governments, from which it was disseminated to the municipal governments and police stations throughout the prefecture. These were then responsible for warning the people.

4. *Types of Signals.* The manner of announcing the "alert," "alarm" and "release-from-alarm" warning, described below, was fixed by national decree to assure uniformity throughout the country. The "release-from-alert" (or "all-clear") signal was not directed nationally, but rested with the discretion of each army commander for his district. The types of signals and warning used, as they existed at the end of the war, are discussed below. The accompanying chart (Page 36) describes how the various signals were announced to the general public.

a. *Confidential Telephone Warning.* Immediately upon receipt of the first information of the approach of enemy planes, confidential telephone calls were made to the prefectural governments, to military installations and to a selected list of important utilities and war industries. This information was not disseminated to the general public, for at this early stage the probable area of attack could not be ascertained with any degree of certainty.

b. "*Alert.*" This precautionary signal, usually the first public warning, was given in the warning zones nearest the path of the approaching raiders generally as soon as they were detected by coastal radar installations, or as soon as the planes entered the area of an adjoining army district. Civilian defense forces mobilized at this signal, but traffic continued and no one was required to take shelter. For status of lighting on this and other signals, see section of report entitled "Protective Lighting."

c. "*Alarm.*" When enemy planes had reached a point approximately 15 minutes flying time away, this signal was given in the zones nearest the approaching raiders. Upon this warning the disabled, aged and children were sent to shelter, and the general public moved toward, but were not required to take, shelter. Watchers specifically designated by the neighborhood groups (Tonari Gumi), neighborhood air-defense groups (Bokugun), or auxiliary police and fire units (Keibodan) or their subunits (Bundan) announced the actual arrival of planes by the ringing of bells and loud cry of "Shelter," at which time the general public was required to take shelter and all traffic ceased.

d. *Termination of "Alarm" (Reversion to "Alert" Status).* Every effort was made to return the area to a normal status as rapidly as safety permitted. Accordingly, as soon as the enemy flight had cleared the area to a distance which would permit a safety time factor of warning in the event of their return, a signal was given which returned the area to the status of "alert" as described above. This signal, quite appropriately, was identical with the "alert" warning (See chart on Page 36) and was always given after the "alarm" signal. It was not given if any bombers remained in the area, but, if only one or two observation craft or fighters remained, it was announced as soon as practicable.

e. *Termination of "Alert" ("All-Clear").* As indicated before, this signal was not prescribed by national decree but, in those army districts in which the "all-clear" signal was adopted to terminate the "alert" period, it was announced when it was evident that all the enemy fliers had left Japan and there was no immediate danger of their return or of the arrival of another flight.

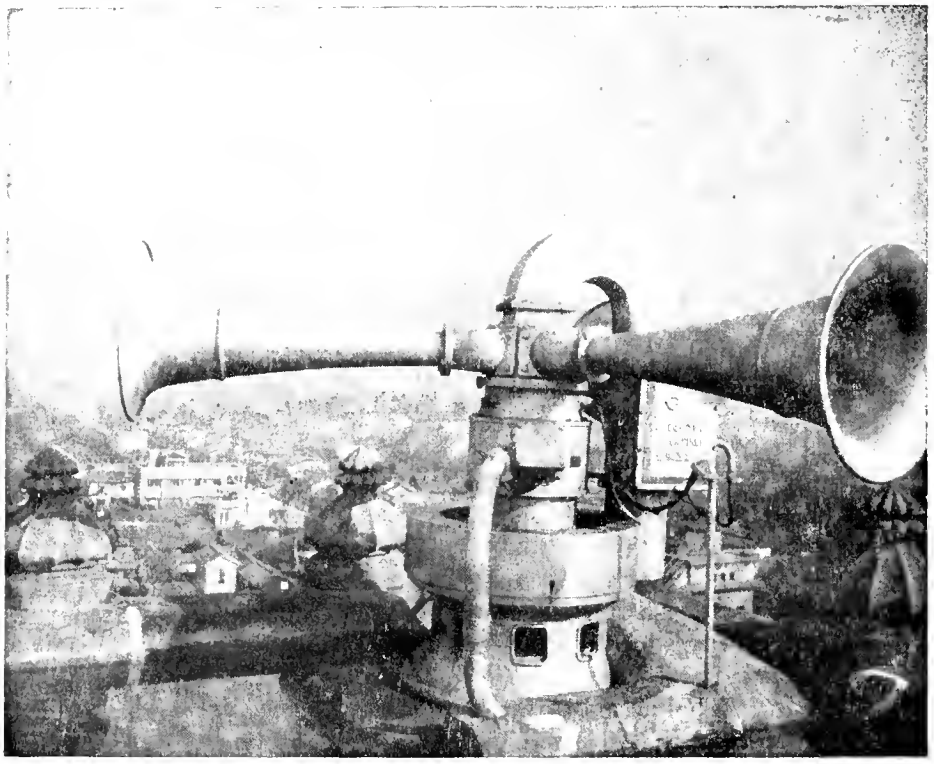
5. *Methods of Announcing Public Air-Raid Signals.* The methods by which the various public air-raid signals were communicated to the public were as follows:

a. *Sirens.* The chief method of conveying air-raid signals to the public was by the use of sirens, generally of a uniform 20-horsepower electric type which were conservatively spaced to insure adequate coverage. The 20-horsepower type of siren in general use is shown on Page 38. In nearly every area studied the municipal siren system was centrally controlled by an automatic switch under prefectural control. In Tokyo a central control switch, in addition to that under control of the Metropolitan Police Board, was operated by army headquarters. Siren systems

were well planned to provide adequate auxiliary methods of control, such as the subdivisions of municipal areas in Tokyo into warning zones, each equipped with a central control switch for operating sirens in that particular locality, the provision for individual siren control to which individual operators were assigned and kept informed by telephone or radio communication and, finally, by the practice of sonic relay from one siren to another. Sirens were conservatively located to provide considerable overlapping of zones of coverage. This assured adequate dissemination of signals and provided alternate coverage for areas where sirens became inoperative.

b. *Radio.* When the B–29 raids on Japan began in November of 1944, the Japanese adopted the use of radio during periods of air raids, primarily for acquainting the public with the status of air-raid signals. At the time the first public signal was authorized, army headquarters cut into the regular broadcasting system to announce air-raid signals and to acquaint the public with enemy air activity and its effect. These broadcasts continued until the departure of the enemy raiders and the announcement of "all-clear."

c. *Other Means.* In addition to the use of sirens and radio for dissemination of air-raid-warning signals, auxiliary and supplementary means were used to insure that all persons (the deaf, sick, and those whom the sirens and radio might not reach) were warned of enemy air activity. These means included bells or gongs, flags or streamers, lights and placards. In addition to these mechanical means, designated members of the neighborhood groups, neighborhood air-defense groups, and auxiliary police and fire units or subunits circulated throughout assigned areas loudly calling the warnings.



20-Horsepower Siren. Type in general use for dissemination of air-raid signals.

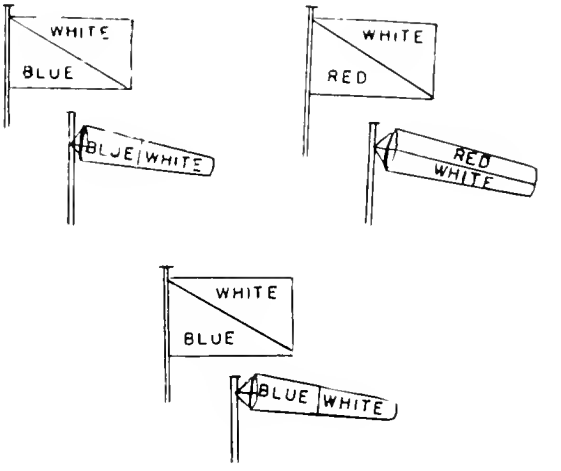
6. *Comments.* a. Generally, the Japanese system of air-raid warning was well-planned and efficiently operated. Even during periods of saturation bombing, no general breakdown of the system occurred, although the devastation of large areas destroyed many of the sirens, connecting lines, and other equipment which restricted the extent of the siren coverage in many places. In some localities shortages of equipment caused deficiencies in mechanical operation which could not be remedied because of the unavailability of the necessary supplies, but, generally, the extent

and type of equipment and the manner in which it was employed insured adequate warning of air raids. From the standpoint of army operation in directing air-raid signals, the system proved flexible, and the factors considered by the military headquarters in arriving at the decision to sound signals, when and where, took into consideration changes in enemy military tactics to the end that the periods of public warning commenced early enough to give sufficient advance notice of the arrival of enemy planes to the public and yet were sufficiently limited so as to interfere as little as possible with normal civilian pursuits and essential production. Specifically:

b. *Sirens.* The type of sirens used and their conservative location so as to provide considerable overlapping of zones of coverage insured adequate dissemination of siren signals and provided alternate coverage for areas where sirens became inoperative. Centralized control of sirens provided prompt and uniform sounding of signals but gave rise to possible disruption of part or all of the system in the event of the destruction of the central control or of power lines. This contingency however, was well provided for in the establishment of an alternate central control (as in Tokyo); by the breakdown of the siren system into smaller zones each with a central control (Tokyo); by provision for individual operators at each siren, connected by telephone and either with or without radio communication; and by sonic relay from one siren to another.

c. *Radio.* The use of radio for transmission of signals and the giving of pertinent air-raid information, after the announcement of the first public signal, followed a course midway between the German practice of announcing to the public all information of enemy air activity immediately upon its receipt and the American system of prohibiting any radio announcements except for limited military releases during the course of the enemy action. The Japanese practice, as a supplement to the siren system, insured wider dissemination of air-raid signals and served to prevent panic by keeping the people informed of a danger that was imminent. No need for radio silence (as a means of preventing enemy craft's homing on broadcasting stations) occurred under the Japanese practice, inasmuch as when the first audible signal was given the planes had already neared their target and little help could then be had by homing on a broadcasting station, even though the planes might be equipped to use such navigational aid, which is doubtful in view of the existence of more precise navigational equipment.

d. *Auxiliary Methods of Announcing Signals.* In addition to the broad coverage afforded by the sirens and radio, Japanese planning commendably provided auxiliary means of dissemination of air-raid signals which insured receipt of warnings by the sick, deaf and those situated so as to be beyond reach of the siren and radio. These measures included colored flags or sleeves, lights, bells, placards and oral announcements of the signals by specially designated members of volunteer groups.



e. *Sounding of Signals by Army Headquarters.* The location of the central switch for sounding Tokyo sirens in the army headquarters avoided time lags in transmission of signals to this important area and prime target. Obviously this practice could be used only over a limited area, but where the army headquarters is located in or near a large metropolitan area such army siren-control serves to speed transmission of air-raid signals.

f. *Alternate Information Center or Warning Central.* All channels of enemy air information led into the army headquarters operations room and from this one place all directions for sounding air-raid signals were sent throughout the army district area. Destruction of this headquarters would have seriously crippled the entire air-raid-warning system within the army district. Of two headquarters examined, one was located in a reinforced-concrete structure designed to give protection against bombs and fire; the other in an office-type building. Here, as found in the study of control centers, was another instance of plan-

ning which did not take into consideration the magnitude and destructiveness of saturation raids, for, in spite of the extreme importance of army headquarters and its vulnerability to bombs and fire, no plan for organization of alternate headquarters was discovered.

B. CONTROL CENTERS

1. *Introduction.* Control centers, as discussed in this report, were those headquarters to which reports of bombing incidents were sent and from which more than one air-raid service was dispatched. Headquarters of municipal services, such as fire and police, even though playing an important part in the civilian defense system, were permanent peacetime headquarters controlling the one particular service, and are, therefore, not included in this discussion of control centers. The control center occupied a vital place in the plan of Japanese civilian defense, tantamount to the control post or headquarters of an army combat unit. It was here that a complete picture was available of the effect of enemy action throughout the entire area under its jurisdiction; it was from here that emergency services were dispatched and a record kept of those already in operation and of those still available for duty.

2. *Operation.* a. *The Control Center of the Auxiliary Police and Fire Unit (Keibodan) or its Subunit (Bundan).* As is indicated in the section of this report entitled "Auxiliary Police and Fire Units (Keibodan)," such units operated as individual organizations, dispatching services from their control centers. In cities where these units covered a greater area, the main operating headquarters was that of a component of the unit known as a subunit (Bundan). In those cases where the various services were dispatched from the control room of the subunit, the control room of the unit was used chiefly for over-all supervision and for providing reinforcements by shifting forces from the area of one subunit to another, although unit headquarters occasionally did retain some services for initial dispatch. All incidents, regardless of their severity, were reported to the control center of the unit or subunit, as the case might be. These reports, indicated either that the incident appeared to be within the control capabilities of the service present, or that reinforcements were necessary. Reports to these control centers were made by the most rapid means—usually by designated messengers—and gave as accurate a description of the incident as circumstances would permit. While reliance was generally placed in the reports concerning the need for assistance, the leader in command of the control room had the final decision in the dispatch of emergency services. The unit or subunit control center was equipped with an operations map on which were plotted the incidents in its area and a chart on which were recorded the availability and dispatch of the emergency services. Reports of all incidents were forwarded immediately from these centers to the municipal fire and police stations usually by telephone or, that failing, by the most rapid means available. It was from these centers, too, that requests were made to adjacent units for reinforcements.

b. *The Main Control Center of the Prefectural Government.* The main control center of the prefectural government (Metropolitan Police Board in the case of Tokyo), located in nearly every instance in the prefectural building or police headquarters, was the over-all headquarters for operation of the civilian defense forces throughout the area. Incidents were reported via two telephone lines from the police and fire stations to the main control center. One of these lines was connected directly with the main control center, while the other ran through the headquarters of the guard rescue unit (Keibitai) to the main control center. The latter line served a dual purpose: as a means of reporting incidents to the guard rescue unit and as an emergency line between the police and fire stations and the main control center. Original dispatch of the various civic and municipal air-raid services, i. e., from the unit or subunit headquarters and from the municipal fire and police departments, was made immediately upon information of the incident and did not await decision from this center. If, however, the over-all picture of damage suffered indicated the advisability of shifting forces from their original dispositions, such decision emanated from this headquarters. In addition to shifting forces already engaged, this control center also commanded certain other services. The nature and size of these differed in each prefecture. Generally they consisted of reserves of transportation, rescue units and auxiliary services which might be required for duty in those areas which had been hardest hit. There were on duty at the main control center leaders or representatives of all the air-raid services, with whom the commander usually conferred in the

dispatch or reallocation of forces. Here, too, an operations map was maintained for plotting incidents, and records were kept of the services dispatched. The prefectural governor was over-all commander of this headquarters but, generally, operations were controlled by an air-defense headquarters commander, usually the head of the police division of the prefectural government. Requests for further assistance were made from this headquarters to neighboring prefectures or to the army.

3. *Reports.* In addition to the messages sent through channels during the course of operations, written reports were compiled as soon as accurate information could be gathered. These reports originated with the units or subunits, were consolidated by the police and fire stations and forwarded to the main control center where they were again consolidated for the entire prefecture. These reports contained complete information of the raid and its results including time of air-raid signals, damage to buildings (partly or entirely destroyed; private houses, public buildings, factories and utilities), casualties (dead, seriously injured, slightly injured, with additional breakdowns for age and sex) material and equipment expended and bombs dropped (incendiary, high explosive, unexploded).

4. *Comment.* The importance of control centers of every echelon, as directing and coordinating agencies of all the civilian defense forces is obvious. Successful operation of the emergency forces during periods of bombing without a strong central control, regardless of the proficiency of personnel and adequacy of training and equipment, would be higly improbable. It is striking to note that even though the organization and interior mechanical and physical set-up of the Japanese control centers were well planned and operated satisfactorily under air-raid conditions, little thought was given to the selection of protected locations for these headquarters or to the establishment of alternate or emergency headquarters. In Nagasaki the main control center was located in a bombproof shelter constructed in the side of a hill, but in no other place was there discovered any such protection for a control center. And at no time during the field study was there any evidence of the organization or even planning of an alternate control center in the event of the destruction of the existing installation. In Tokyo, the first and obviously one of the prime targets for American planes, it is surprising to learn that, even after the Doolittle raid in April 1942, no immediate effort was made to organize a separate control center. Operations were conducted from individual offices of the several officials concerned, located throughout the prefectural building. It was not until shortly after the first raid on Yawata in June 1944, that plans were made for the construction of the main control room which was finally built in the basement of the Metropolitan Police Board building and remained there until the end of the war.

C. INCIDENT CONTROL

1. *Introduction.* "Incident Control" expresses that authority or command which prevailed at the scene of a bombing incident and which directed the employment of the emergency services dealing with it. This command authority could reside in one person who could continue in control throughout the entire operation or it could shift from one to another of the leaders of the various services required at the spot. The Japanese adopted the latter method and shifted control to successively higher echelons during the course of the action. This basic principle was applied uniformly throughout the cities studied, its application varying locally with differences in the organization and employment of the various emergency services.

2. *Operation.* The following explanation is given to illustrate the application of the principles of incident control: (This discussion assumes the participation of all the services, although employment of succeeding higher echelons prevailed only when the incident continued beyond the capabilities of the forces on the spot.

a. *The Neighborhood Group (Tonari Gumi) or the Neighborhood Air-Defense Group (Bokugun).* The first air-raid-defense officer to assume command at the scene of an incident was usually one of three men: the leader of the neighborhood group, the air-raid-defense leader of the neighborhood group, or the leader of the neighborhood air-defense group. Whichever one assumed command directed the efforts of the members of the household and the assembled neighbors in using the household air-raid-defense equipment, augmented by the hand pump with which the neighborhood groups or neighborhood air-raid-defense groups were usually equipped in putting out the fire. The control of this officer was usually short-lived because of the prompt arrival of other echelons. The arrival of reinforcements of similar

groups under command of a like leader did not divest the officer then on duty of his authority, which is illustrative of another rule of incident control, i. e., as between like groups the leader of the service in whose area the incident occurred continued in command.

b. *The Auxiliary Police and Fire Unit (Keibodan) or its Subunit (Bundan).* Generally, the next organization to assist was the fire or guard arm of the auxiliary police and fire subunit, or the unit itself in those areas where it was not broken down into subunits. In certain localities the block association (Chokai) contained an air-defense section which was employed even before the auxiliary police and fire unit or its subunit. In any event, the arrival of the leader of any of these services caused control of the incident to shift. The application of another principle of incident control is to be noted—the authority of the leader of an arm generally passed to the assistant leader or leader of the organization of which it was a part upon the latter's arrival. One exception to this rule was the case where the leader of the defense section of the block association was a member of the auxiliary police and fire unit or its subunit and where he had been specially designated to such position. Where municipal services, discussed below, were engaged, the basic principle might be applied through a gamut of succeeding senior officials, including even the governor of the prefecture.

c. *The Municipal Services.* Upon the arrival of one of the municipal services, the leader of that service became the incident control officer. As between diverse municipal services or reinforcing services of equal echelons, the rule of seniority among leaders prevailed. Command remained, however, in the local municipal chain regardless of the rank of any reinforcement from another municipality.

3. *Comment.* The Japanese plan of incident control, under which authority shifted through leaders of succeeding echelons of emergency services, operated successfully. Officials concerned with its operation were unanimous in expressing satisfaction with its planning and operation. The system, however, might not have worked too well among people who lacked the unquestioning obedience of the Japanese. As opposed to this practice, the appointment of a specific incident control officer to continue in command of an incident from start to finish (as used by the British) would obviate the necessity of acquainting succeeding control officers with the status of the incident. On the other hand, sufficient specifically designated officers, well versed in the functions of all civilian defense services, would not have been available in the large raids suffered in Japan where a great number of incidents occurred simultaneously.

D. UNEXPLODED BOMBS

1. *Introduction.* The term "unexploded bombs" includes delayed action bombs and duds. Original plans for the disposal of unexploded bombs provided for the use of civilians. Organization and training of civilians for this duty, however, did not progress very far, for officials of the Ministry of Home Affairs felt that, in view of the danger involved, such duty properly belonged to the military. To that end each army headquarters was charged with organizing and training units for this work, civilians being responsible only for reporting the presence of such bombs and for taking precautionary measures prior to the arrival of an army bomb disposal squad.

2. *Operation.* a. *Detection and Reporting.* The discoverer of an unexploded bomb or of a crater in which a bomb might lie immediately reported his findings to the nearest police authority, to the headquarters of the appropriate auxiliary police and fire unit (Keibodan), or its subunit (Bundan), whichever was closest, giving the location of the bomb, time of discovery, whether it was above ground or imbedded, and a description of the bomb if he could. These reports were then forwarded to the local military unit charged with the responsibility of bomb disposal in that area. Civilian training in identification of types and sizes of bombs was meager. Early publications contained little information of this nature and, with the exception of a few exhibitions of captured enemy materiel, little effort was made to acquaint the public with the characteristics of the latest types of enemy bombs.

b. *Precautionary Measures.* Civilians (police and other officials as well as the ordinary citizen) were prohibited from handling unexploded bombs, with the exception of incendiaries. Immediately upon the discovery of a bomb, civilian officials were required to cordon off the area, to remove all people from it and prevent the entry of traffic into it. This action was taken by the first official who became aware of the situation (either a municipal officer or a member of one of the civilian defense organizations described else-

where in this report). There existed, however, in the auxiliary police and fire units (Keibodan) an arm specifically charged with the function. Cordonning regulations specified a minimum area of a radius of 54 yards (50 meters) for bombs up to 1,100 pounds (500 kilograms), which area might be changed by the leader of the bomb disposal squad after examination of the projectile and the surrounding area. With the exception of cordonning, no other precautionary measures, such as covering or embanking the bomb or crater, were taken prior to the arrival of the army bomb disposal squad.

c. *Neutralization and Disposition.* Under the plan of army responsibility for disposal of unexploded bombs, allocations of areas of responsibility were made so that definite channels of reporting were established from municipal officials to the nearest military unit. Army tables provided for the formation of two unexploded bomb disposal squads in each infantry, artillery, cavalry and service regiment, three per engineer regiment and one or two for each special unit. Members of these squads were regular members of the military organization and were specially trained in disposal techniques. They were detailed for such service only when necessary and undertook it in addition to their normal military duties. Training and organization of these squads were the responsibility of each separate army headquarters and were not, therefore, uniform. In some units the squads contained men for labor duties, as well as one or more soldiers technically trained to neutralize the bombs, but in many areas labor details were also drawn from local auxiliary police and fire units, designated for that purpose. These labor details freed the bomb, if embedded, and hauled it to a designated collection point. No evidence was discovered of the use of civil prisoners for such work. Technical directives of the army for bomb neutralization included instructions for defusing but, generally, bombs were rendered harmless by the application of a thermite charge to the side of the bomb. The charge burned through the casing and burned out the explosive charge within. Bombs thus neutralized were collected for salvage purposes or, in the case of a new type, were sent to designated military units for technical study. Directives provided that bombs lying near important facilities or areas, such as war industries, power utilities, vital communication arteries, military installatons and the like were handled promptly, but no effort was made within 48 hours to dispose of bombs which were lying where detonation would have no serious effect. In the case of time bombs, this period was extended to a minimum of 80 hours. Incendiary bombs were collected by local officials and turned over to military authorities.

3. *Comment.* Reports of air force operation indicate that the number of unexploded bombs in Japan was small in comparison with those in Germany. Consequently, the unexploded bomb disposal facilities of the Japanese army were not greatly taxed and functioned efficiently throughout the war. Meager civilian instruction in bomb identification gave rise to incorrect and unnecessary reports and, obviously, would have caused considerable confusion, had the American raiders dropped a higher percentage of high-explosive bombs with a resultant larger number of unexploded missiles.

E. FIRE SERVICES

Fire Protection

1. *Introduction.* The fire services investigation in the principal cities of Japan included the study of the history and development of the fire department and of its effectiveness during air raids. Information was obtained by interviews with officials of the police, fire and water departments; by checking fire department records; by inspecting fire equipment, fire stations, training and drill methods, fire prevention organizations, fire boats, water supply and distribution systems, fire communications methods and related subjects.

a. *Development of Japan's Fire Protection.* (1) *Founding of Knight Fire Fighters (1640).* Near the beginning of the Tokugawa Era in about 1640 when Japan was under the feudal system, knight fire fighters (Buke Hikeshi) were ordered by the central government to protect the castles and minor houses in Edo (now Tokyo). It was estimated that 250 brigades, large and small, were formed at that time. The knight fire-fighter brigades were under the Bugyo-Sho which corresponded to the present day Metropolitan Police Board. Down through the generations the fire-fighting forces have been under the direct supervision of the police.

(2) *Organization of Volunteer Fire Fighters in 1720.* In 1720, when Edo (Tokyo) a city of one and a half-million people was partially destroyed

by fire, the inefficiency of the knight fire fighters was exposed. Thereafter the government organized volunteer civilian fire-fighter units and dispensed with the employment of knights of the feudal lords. This organization lasted 178 years. Its only modernization was the importation of a steam pumper in 1872 and the purchase of a large number of hand-operated pumps.

(3) *Establishment of Fire Brigades in Cities and Towns under Police Authority (1898).* In 1898, a new law provided for the establishment of fire brigades under the control of the police. All cities, towns and villages were considered within the scope of this law, and firemen, including the chief, were chosen civilians, so that the brigade still retained its voluntary status.

(4) *Establishment of Full-Time Fire Departments in Large Cities (1918).* In 1918 for the first time in Japan, a fire brigade was established under the government's direct control with firemen devoting their entire time to the fire service and being paid by the government. This fire-fighting force was established in six big cities in Japan, viz., Tokyo, Osaka, Kyoto, Nagoya, Yokohama and Kobe. During the last 2 years of the war a few important industrial communities, such as Nagasaki, were included among the cities with full-time fire departments. In all other cities mentioned above, however, there still existed the same volunteer fire brigades.

2. *Organization of Fire Departments.* a. *Central Government Chain of Command.* The fire departments of Japan were authorized and directed from the ministerial level through the police bureau of the Minister of Home Affairs in Tokyo. In turn, the governors of the prefectures were the administrative heads of the police departments within their jurisdictional areas. The prefectural directors of the police bureaus, by order of the governors, supervised administrative matters relating to fire departments.

b. *Fire Department Section of Police Departments.* A section or subsection of the prefectural police departments administered all the affairs of the fire departments, including assignment and transfer of personnel, budget, purchase and location of fire equipment, fire prevention and other related matters. The heads of these sections were police officers who were without fire training but were usually graduates of an imperial university.

c. *Selection of Fire Chiefs.* The fire chiefs of regular fire departments, with the exception of Tokyo, were appointed by the prefectural police boards and approved by the prefectural governors. In most instances the chiefs of the fire sections of the police departments were assistant or division police inspectors, and their appointment was more in the form of a transfer from police to fire duty. In Tokyo, however, the chief of the fire department was appointed by the Minister of Home Affairs with the sanction of the emperor, but qualifications for this position did not require fire department experience.

(1) *Subordinate Fire Chiefs.* It was a common practice to transfer police officers into important fire department positions, including those of division and battalion chiefs. The regular members of the fire departments, particularly officers, were quite vociferous in denouncing the high-handed manner in which the police departments controlled the fire departments.

(2) *Advancement in Grade Below the Rank of Chief.* The promotion of firemen in the fire departments of the various cities in Japan was quite similar. In Osaka, for example, second-year firemen advanced to sergeants by successfully passing competitive examinations, written and oral. Sergeants after one year in grade were eligible to advance to subofficers in the same manner. Subofficers after 5 years in grade were promoted to captain on merit and ability without an examination.

d. *Selection of Fire Department Personnel.* Prior to December 1941, the recruiting of firemen in the various prefectures was in general the same. There was a slight variation in some cities as to age, height and weight requirements. It was required of recruits that they be able-bodied, between the ages of 19 and 35 years, at least 5 feet tall, have a minimum weight of 115 pounds, and 8 years of schooling. Boys, however, between the ages of 15 and 17 years were recruited as junior firemen. Their duties consisted primarily of serving as messengers, office boys and fire alarm operators.

e. *War-Time Recruiting.* During the early part of the war the people of Japan were of the opinion that air raids on their homeland were not possible. Experienced and trained firemen were not exempt from military service. It became necessary, therefore, to reduce the physical standards, to lower the minimum age to 17 years, to increase the maximum age to 44 years, and to waive schooling requirements in order to fill the vacancies created by the induction of fire fighters into the armed services. Actually, only men unfit

for military duty were available for the fire service, with the result that fire departments were soon made up of inexperienced and untrained men.

f. *Increase in Fire Department Personnel During 1944 and 1945.* As the Allied forces moved closer to the Japanese home islands an intensive program was initiated by the Ministry of Home Affairs to increase the size of fire departments and to establish new departments in certain industrial cities which had been dependent upon volunteer firemen for their protection. Men were recruited so rapidly that proper training was not possible. Peacetime fire departments were increased from three to five times their normal size. Tokyo's department was enlarged from 2,000 firemen to 8,100 men including 2,700 junior firemen. An effort was made in that city during the last year of the war to establish a fire department of 12,502 firemen, but the man-power shortage in Japan made it prohibitive. The Osaka fire department increased its personnel from 1,335 to 5,781, and Kobe's department was expanded from 414 to 1,830 firemen.

g. *Working Schedule, Wages and Benefits.* The national law established through the Ministry of Home Affairs provided for standard working hours and pension benefits, but permitted the prefectural governments to establish their own personnel qualifications, promotion systems and wage scales.

(1) *Working Schedule.* Firemen worked a two-platoon system, 24 hours on duty and 24 hours off duty, with an annual paid vacation of 3 weeks. Off-duty firemen were required to report to their respective fire station upon the receipt of an air-raid "alert." During the last 6 months of the war few firemen spent more than an hour or two at a time with their families owing both to the man-power shortage and the many air-raid alarms.

(2) *Fire Department Salaries.* First-year firemen as a group received salaries in normal times about one-half of the average workman's pay. The workman's pay scale, however, increased more rapidly during the war than the firemen's so that the latter's salary became approximately one-third the laborer's. The inducements to become a firemen lay in the permanency of the job, pension benefits and the social importance gained in the community by being a government employee.

(3) *Pension Provisions.* The pension law in Japan provided for retirement of firemen through captains after 12 years of service at one-third their base pay. Technicians, battalion chiefs and above, were required to serve 17 years before being eligible for the minimum pension. Firemen injured in line of duty were entitled to a pension the amount of which depended upon the extent of their injury. They were entitled, also, to full hospitalization and medical service.

h. *Air-Raid Casualties of Firemen.* Japanese fire department training instructors devoted considerable time to lecturing firemen on the importance of bravery and duty in fire fighting. The expected number of firemen were injured and overcome by smoke in fighting large fires, but the casualties mounted as air raids increased, particularly incendiary bombings in which high explosives were also dropped. In fact, the fire chiefs admitted that firemen, together with auxiliary fire fighters, soldiers and sailors, took cover or fled when even a few high-explosive bombs were dropped in incendiary raids. In Tokyo, a total of 201 firemen was killed during air raids. Of that number, 100 met death in the 10 March 1945, B–29 incendiary raid. Severely injured firemen totaled 105 and slightly injured 109. In the city of Osaka 71 firemen were killed, 55 seriously injured and 374 slightly injured during air raids. From 4 February 1945 to 22 February 1945 in Kobe, 32 firemen were killed and 101 injured. The atomic bomb in Nagasaki killed 12 firemen and seriously injured 28.

3. *Training of Firemen.* a. *Training Schools.* Prior to the war it was the general practice of cities with regular fire departments to give recruit firemen 3 months of indoctrination instruction at established fire training schools which were sections of police training schools. Tokyo and Osaka, however, maintained their training schools apart from the police schools.

b. *Type of Training.* The fire-fighter training program in Japan was modeled after the Tokyo fire department's program which, prior to the war, consisted of a three-months' training course divided into 40 percent educational studies and 60 percent physical training, including military drills and evolutions in handling hose, ladders and pumps. During the war, recruit firemen were given only 30 days training in the school (8 hours a day) before being assigned to fire stations. This short course of training featured strenuous physical exercises, military drills as used by the Japanese army, and simple hose, ladder, and pump

Recruit firemen, Osaka fire department, standing a chief's inspection at training school.

Osaka recruit firemen removing hose reel cart from bed of pumper in a hose evolution drill, water being drafted from underground storage tank.

evolutions. During the entire period of training, firemen were housed and fed at the training schools. (See Pages 46 and 47 for illustrations of a training school.)

e. *Instructors.* Sergeants, suboffiicers and captains were the training officers, and a battalion chief or higher official usually headed the school. The instructors were selected for their educational background, physical fitness, knowledge of military drills, personality and experience.

d. *Training Equipment.* Owing to the shortage of automotive pumping apparatus, gasoline, fire hose and fire-fighting appliances, the training schools were compelled to use dummy equipment and unserviceable tools and appliances for drill purposes. In the Tokyo training school, for instance, recruit firemen took their positions on a decommissioned fire pump as if it were rolling to a fire and, at commands given by a training captain, they removed a hose reel cart from the hose bed, reeled out two sections of hose (131 feet), connected the suction hose to the pumper, then laid an additional two sections of hose back to the apparatus and attached nozzles. This concluded the hose evolution. Seven firemen were used in this standard drill which was the only pump and hose drill executed by the fire departments inspected. Every movement of this hose evolution was precise and executed only by a command. It was the practice of Japanese fire

Osaka firemen in training school with one section (65.5 ft.) of linen hose playing a 7/8-inch stream at 80 pounds pump pressure.

chiefs to declare an engine company out of commission if a full company of seven firemen were not available to respond to an alarm. They apparently had not learned to improvise and operate their equipment without a full complement of men.

e. *Fire Station Drill.* There was a program in most fire departments for daily drills and lectures. This was not done according to plan because of the shortage of qualified officers and the added responsibility placed upon the fire department in training auxiliary police and fire units (Keibodan). The rationing of gasoline to fire departments restricted the use of pumpers in drills. During the tour of inspection of many fire stations in principal cities of Japan, no drills were observed other than those requested by the inspection party.

4. *Fire Divisions, Battalions and Stations.* a. *Fire Divisions and Battalions.* The large cities

A division headquarters station in Tokyo.

A battalion headquarters station in Tokyo.

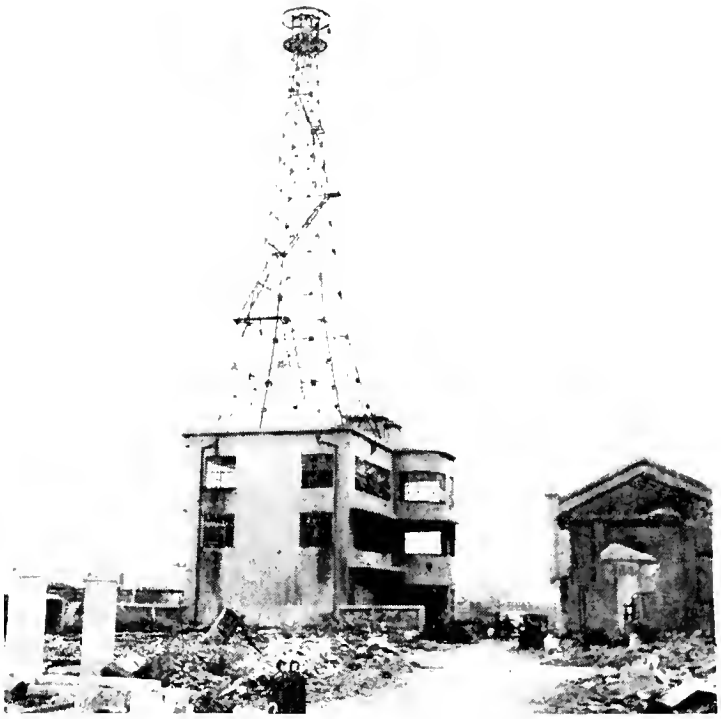
of Japan were divided into fire districts (Chiku) with a fire department division headquarters in each. These district were further divided into battalion districts (Kankatsu Kuiki), each containing a battalion headquarters station. From watch towers, however, from 60 to 125 feet high, were built on top of, or adjacent to, most of the regular stations. (See Page 50 for illustrations of watch towers on fire stations.)

5. *Apparatus and Equipment.* a. *Pumping Apparatus.* Japanese-built Nissan, Hekoku and Toyoda pumpers rated at 350- to 500-gallon-per-minute capacity were most frequently used. There were some American-built truck chassis, mostly Whites, Chevrolets and Fords, which were equipped with Japanese centrifugal pumps. A few American LaFrance fire trucks purchased in the United States 20 to 25 years before were still in service. Small Datson cars and motorcycles equipped with 120-gallon-per-minute pumps were in service in many stations, and were used principally in areas where streets were too narrow for the travel of standard size apparatus. (See Page 51 for illustration of small 120-gallon-per-minute equipment.) Motorized fire apparatus in important cities was increased during the war from two to five times. In 1943, Tokyo had 280 pieces of mobile equipment, and in early 1945 it had 1,117 pieces; Kyoto increased its department

Nagasaki substation damaged by a high-explosive bomb (not atomic bomb) on 1 August 1945.

two to five battalions made up a division (district). An assistant chief was in charge of each division and a battalion chief in command of each battalion. After the devastating incendiary air raids beginning in March 1945, districts and battalions were reduced in number since many areas were completely burned out. In Tokyo, for example, 12 fire districts were reduced to 10, and in Osaka 25 battalion district were decreased to 12. (See Pages 48, 49 and 50 for illustrations of fire stations.)

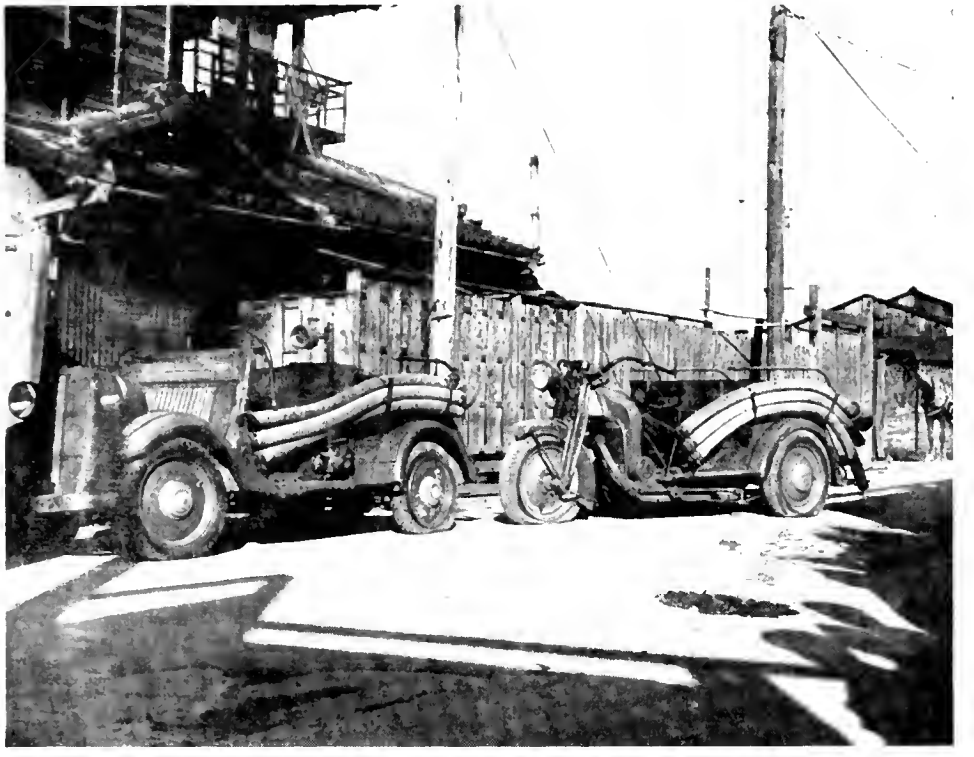
b. *Fire Stations.* There were from three to six fire stations in a battalion district depending upon its size or importance. Small stations housing one company were called substations. Many such stations were built during the war in the fire department's expansion programs. Enclosed hose drying towers, so common in American fire stations, were not used by the Japanese. Fire



A burned-out battalion headquarters station with 125-ft. watch tower in city of Osaka. Twenty firemen lost their lives in this station.

A burned-out battalion headquarters station with 50-ft. watch tower in Tokyo.

from 35 to 80 pumpers. Most of the additional apparatus was acquired from small towns and village volunteer departments. Tokyo procured 559 new 450-gallon-per-minute pumps, which



Type of small Datson car and motorcycle with 120-gallon-per-minute pump used in Osaka.

constituted the major portion of all fire apparatus built during the war.

(1) *Equipment Carried on Pumps.* The maximum equipment carried on pumps was as follows:

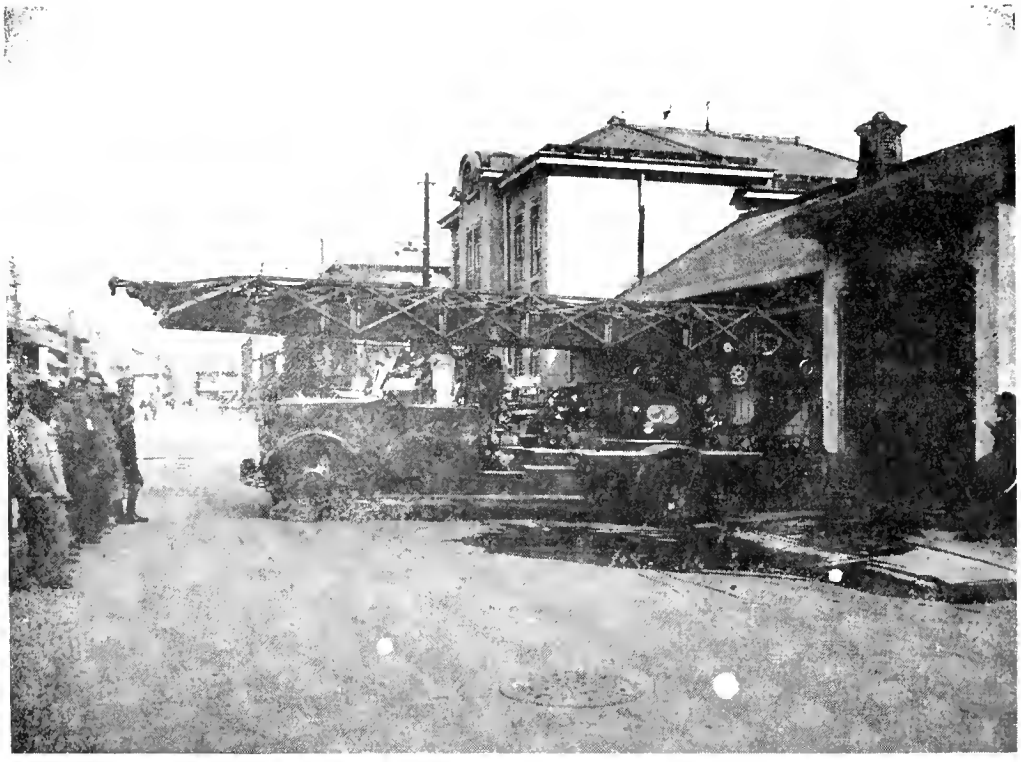
1 fire axe, pick type, 4 lbs.
1 ladder, beam, 12 ft.
1 ladder, roof, 12 ft.
2 pike poles, 8 ft.
2 crowbars, 4 ft.
1 rope (1") 18 ft.
1 rope ($1\frac{1}{2}$") 50 ft.
2 smoke masks, canister type.
3 spare nozzles, $\frac{1}{2}$", $\frac{5}{8}$", and $\frac{3}{4}$".
40 sections $2\frac{1}{2}$" single-jacket linen hose (65 ft. each).
2 hose carts.

Only those companies in the high valued district carried all the equipment listed above.

b. *Ladder Trucks.* There were but four aerial ladders in Japan: three in Tokyo and one in Kyoto. Only one, however, of the Tokyo ladder trucks, a Magirus (German-make) 85-foot extension, was in service. The two Japanese-built 100-foot aerials had defective turntables and the motors were in need of repair. The Kyoto 85-foot aerial ladder, Japanese-built, Magirus type, was mounted on a 1939 White truck. (Illustration on Page 52.) Each of the ladder trucks of these two cities was equipped with a 500-gallon-per-minute centrifugal fire pump, but was not provided with rescue gear, forcible entry tools, electric wire cutters, rope, extra ladders, heavy jacks, salvage covers, life nets, shovels, axes, saws or other tools and equipment which are usually found on an average ladder truck in the United States. They were bare ladder trucks carrying only an aerial ladder and a pump. The longest ladders observed in the Japanese fire departments, other than the aerials, were 20-foot extension ladders which were carried on some pumpers.

c. *Fire Boats.* The equipment of the marine sections of fire departments in Japanese seaport cities was inadequate by American standards for harbor fire protection.

(1) *Tokyo Marine Section.* Tokyo with its estimated 100 miles of waterfront, including the harbor area proper and the canal system and



(Above) One of four aerial ladders in all of Japan. Magirus 85-foot extension ladder in Kyoto fire department.

(Right) Kyoto's aerial ladder extended with a 5/8-inch stream from a 2½-inch line.

rivers, had three small 500 gallons-per-minute fire boats in service in 1942. This number was increased early in 1945 by eight new navy-type patrol boats. The latter were 6-ton craft, 36 feet (11 meters) in length, 8.5 feet (2.6 meters) beam with a draft of 3 feet (1 meter) and were powered by an 80-horsepower, gas-kerosene, internal-combustion engine, capable of producing a speed of 12 to 15 knots. Each boat was equipped with a 500-gallon-per-minute, single-stage, centrifugal pump, powered by a four-cylinder, gas-kerosene engine. Each was also equipped with four $2\frac{1}{2}$-inch outlets and one turret nozzle with $1\frac{1}{8}$-inch tip. A boat's crew was to have consisted of a captain, an engineer and five firemen but, because of the man-power shortage, each operated with a reduced complement. The fire-fighting gear carried on these boats was almost identical in amount and quality with that carried on land pumpers. Because of their maneuverability and shallow draft, these boats played an important part in fire fighting along the water front during air raids when land companies were unable to function. There was no record, however, of their controlling fire aboard ships in the harbor. Their inadequate pumping capacity, meager equipment and crews of firemen with no knowledge of modern methods, tools and appliances for shipboard fire fighting made them seem ineffective by American standards.

(2) *Other Port Cities' Marine Fire-Fighting Sections.* Yokohama had at the outset of the war one old 25-ton tug, equipped with a 1,000-gallon-per-minute fire pump. It was sunk during the 29 May 1945 air raid. Fourteen navy-type patrol boats similar to Tokyo's were procured late in 1944 and early 1945. Osaka's one 1,000-gallon-per-minute fire boat (tug type) was destroyed in the 13 March 1945 air raid. Kobe maintained one small boat of 350-gallon-per-minute capacity, and Nagasaki had two government-owned small craft for fire fighting. (Illustration, Page 53.) (For a detailed description of harbor protection see "Harbor Air-Raid Protection and Port Security" section of this report.)

One of the two government-owned patrol boats in Nagasaki. Illustration shows two ½-inch and ¾-inch streams from a 350-gallon-per-minute pump driven by a Ford V–8 motor.

d. *Fire Hose.* A single-jacketed, unlined linen hose, $2\frac{1}{2}$ inches and $1\frac{1}{2}$ inches in size, was the standard fire hose used in Japan. The sections were 65 feet (20 meters) in length and were equipped with screw- and snap-type brass coup-

lings. All cities except Tokyo used the snap-type coupling in connecting one section to another, but a screw-type coupling was used in connecting to pump gates. Tokyo used the snap coupling only for connecting to the hydrant and pump gates. Fire pumpers were equipped with two to four 2½-inch and 4-inch hard rubber suction hose sections, from 10 to 15 feet in length. Linen fire hose was tested at random by the manufacturer to 300 pounds per square inch. Fire departments did not test hose upon delivery or at any time during its lifetime. The Japanese Navy stripped the large cities of its new hose leaving them with hundreds of sections that had as many as 300 patches each. The hose in service would have probably burst at pressures in excess of 150 pounds, but working pressures rarely exceeded 80 pounds. Most cities maintained one complete change of hose for each pumping apparatus. The 1½-inch hose was used on small 120-gallon-per-minute pumping apparatus.

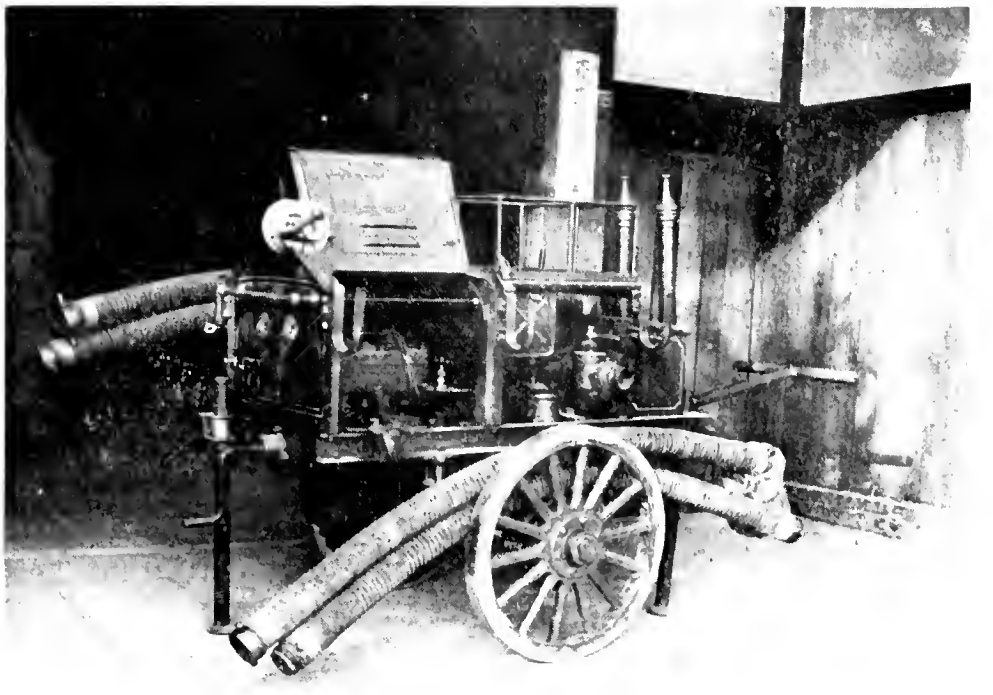
e. *Other Fire Equipment.* Fire apparatus, appliances and special tools common in the fire departments of American cities were conspicuous by their absence in Japanese fire departments. Special mobile rigs and companies, such as salvage, light, CO_2, foam, rescue, demolition, airfield crash rigs and even water tanks with booster pumps, were never a part of their fire departments. The common portable fire extinguishers of the CO_2, carbon-tetrachloride, foam and water-pump-can types were not used by Japanese firemen. In Tokyo, however, a 5-gallon, back-type, liquid-foam extinguisher was on each fireboat. This type of extinguisher produced approximately 60 gallons of foam from each 5-gallon container. There were only 12 cans of spare liquid foam in the entire department. Tokyo had, also, 30 self-contained breathing apparatus (Drager two-hour type) which were stored at the central headquarters station and, if needed, were sent to the scene of fire by any extra apparatus available, usually arriving too late to be of service.

f. *Maintenance of Fire Apparatus.* Only two cities, Tokyo and Osaka, operated a central repair and maintenance shop for the overhaul and repair of fire apparatus. Other cities depended upon privately owned garages or manufacturers' mechanics for their repair work. The shortage of skilled mechanics plus the lack of replacement parts accounted for an average of 20 percent of fire apparatus' being out of service in 1944 and 1945. The fire equipment generally was in a poor state of repair, and in all cities observed except Kyoto, engines were hand cranked. No stand-by apparatus was available for temporary use while equipment was out of service.

g. *Gasoline Supply.* Prior to the March 1945 air raids all fire departments except Tokyo were restricted to a 2-hour gasoline supply for each pumper. During the 14 March 1945 air raid over Osaka, 48 pieces of fire equipment were destroyed for lack of fuel to move them out of the path of the flames. After this disastrous experience the transportation department increased the supply to 5 hours for each pumper. Even though Tokyo had 100,000 gallons of gasoline in reserve for fire department use, a total of 186 fire trucks was lost during air raids, 95 of this number being destroyed on 10 March 1945. An effort was made to refuel fire equipment during fires, but firemen hauling gasoline in drums were unable to locate their apparatus because of the smoke and obstructed streets, and, consequently, much equipment was abandoned as the fires closed in upon it.

6. *Auxiliary Police and Fire Units (Keibodan).* a. *Organization.* The police departments exercised over-all supervision of the auxiliary police and fire units. It trained these units in guard duty and fire-fighting techniques. Auxiliary firemen constituted about 40 percent of the auxiliary police and fire units (Keibodan). The leaders of the auxiliary firemen received additional training at their nearest battalion headquarters fire station. In Tokyo, for example, 5,164 men, known as special volunteer firemen, were to have spent 8 hours one day of each month at their nearest fire station for drills and instruction. About 60 percent of this number was regular in attendance. Prior to the war only six cities maintained full-time fire departments. Therefore volunteer firemen held an important position in Japan since all cities, including those with regular fire departments, depended much upon these units for protection. Auxiliary police and fire units were organized under a national law, but each prefecture prepared its own local ordinances and regulations in conformance with the national law. For details of this subject see the section of this report on "Auxiliary Police and Fire Units."

b. *Duties.* In actual operation the police and fire sections of the police departments could call upon these units for reinforcing service. In cities with no regular fire department these units maintained fire stations and did fire fighting as volun-



Type of hand-drawn, 120-gallon-per-minute, motor-driven pump on two-wheeled cart, used by auxiliary police and fire units (Keibodan).

Hand-operated pumps from 20- to 50-gallon-per-minute capacity used by auxiliary firemen of the auxiliary police and fire units (Keibodan).

(Above) Cement water tanks (70 gallons) for fire protection in neighborhoods.

(Right) Barrel for water supply of hand pumps in neighborhood.

teers. They compared favorably, in man power and equipment, with the full-time fire departments.

c. *Equipment.* In cities with regular fire departments the auxiliary police and fire units were provided with a few small cars, motorcycles, and many hand carts, all equipped with gasoline-driven, 120-gallon-per-minute pumps. Hand-operated pumps from 20- to 50-gallon-per-minute capacity were also provided in addition to bamboo ladders, pike poles, shovels, axes, fire beaters, rope and buckets. (See Page 55 for illustrations of pumping equipment.)

d. *Neighborhood Groups (Tonari Gumi).* There were thousands of men, women and children in neighborhood groups who were given some training in fire fighting by the leaders of auxiliary police and fire units. They equipped themselves with small hand pumps, concrete water tanks (30 to 70 gallons), wooden water barrels, small cement-lined water holes, buckets and fire beaters. (See Pages 56 and 57 for illustrations of water containers.) They were credited with extinguishing many incipient fires but, like the auxiliary firemen, were of little help in controlling fires caused by saturation incendiary air raids.

e. *Student Volunteer Firemen (Gakuo Tai).* Students, 17 to 20 years of age, exempt from military service, were organized into fire-fighting units for the purpose of assisting the regular fire department personnel. These student firemen worked one day in every three at their nearest fire station and, in the event of an air-raid alarm, off-duty students reported to their respective stations. This was a national plan and proved very successful in Tokyo, but it was the only city in Japan where it was put into effect. A total of 3,460 student volunteer firemen worked with the Tokyo fire department, and 65 of them were killed fighting fires.

f. *Special Fire Brigades (Tokusetsu Bogodan Shobohan).* Industry was charged with providing its own plant protection. Factories, manufacturing plants and other places of employment organized their own fire-protection units. Large shipyards, aircraft plants and other war plants maintained full-time firemen in addition to volunteer fire brigades. These units received some

Small cement-lined water hole and 30-gallon water tanks in background in Nagasaki atomic bomb area.

assistance from prefectural fire departments in training their personnel in fire-fighting measures and in the operation and maintenance of equipment. Drills were conducted several times a week. (For detailed information on this subject see section of this report on "Factory Air-Raid Protection.")

7. *Fire Alarm Systems.* a. *Alarm Boxes.* Electric fire alarm boxes were not extensively used in Japan, and those in use were obsolete and unreliable. These boxes were on posts and standards at street intersections in high valued districts.

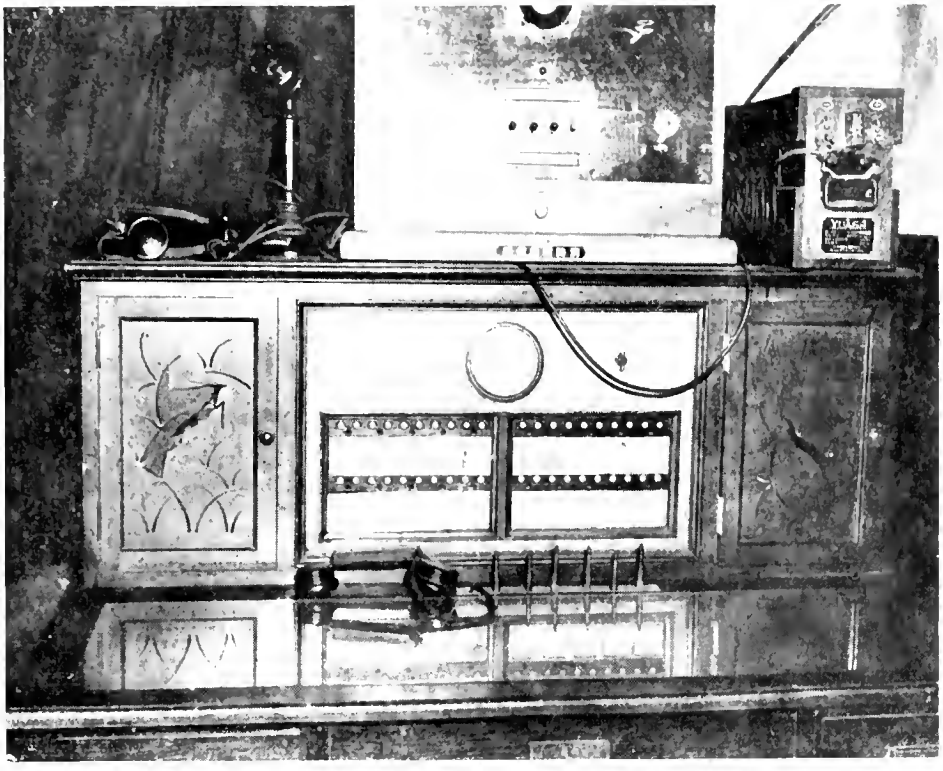
b. *Telephone Alarms.* A special telephone number was used in principal cities for reporting fires. Telephone exchanges in the several fire districts maintained one trunk line to their nearest battalion station. Phone fire alarms were relayed over a fire department line from the battalion stations to the fire stations or substations in the immediate fire area. (Photo Page 59.) These calls were followed up by a bicycle or motorcycle messenger. During the last few months of the war foot messengers were used in relaying fire alarms. There were no central telephone alarm

A type of fire alarm box in Japan.

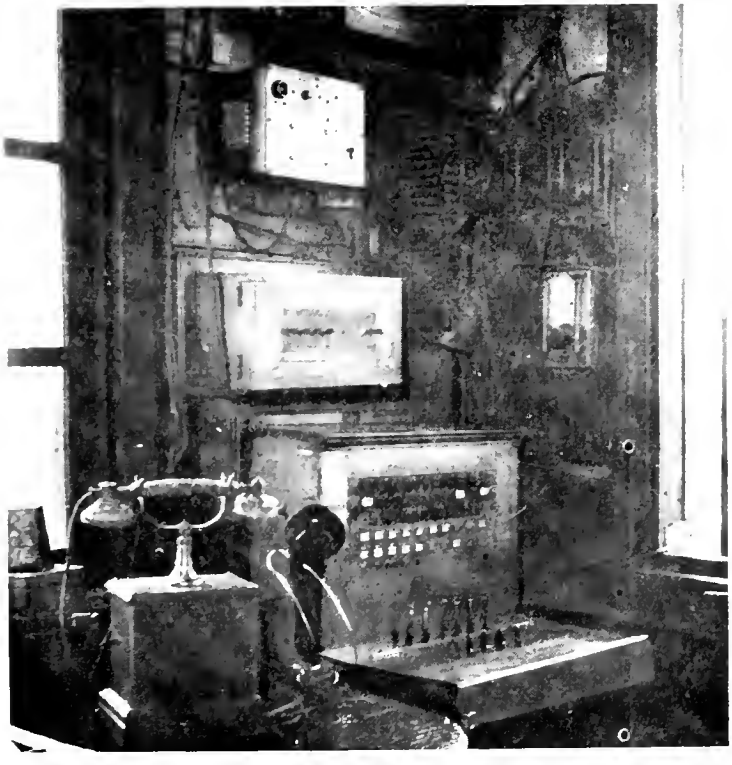
(See Page 58 for illustration of a fire alarm box.) They were connected to the nearest fire station, except in Tokyo, where a central alarm office was maintained. No auxiliary power was provided for the alarm circuits and maintenance was poor. Short circuits and false alarms due to defective equipment were frequent. At the conclusion of the war practically all fire alarm boxes were inoperative due to air raids and lack of maintenance. No auxiliary fire alarm boxes were connected to the fire alarm circuits, but in a few instances large department stores and industrial plants maintained a fire alarm box which was connected with the nearest fire station.

offices for dispatching fire equipment. Some large residences, factories and business houses maintained private telephone lines to their nearest fire stations, but the average Japanese home and small business had no telephone. In Tokyo, the entire telephone fire alarm system was knocked out during the March 1945 raids and had not been restored by November 1945.

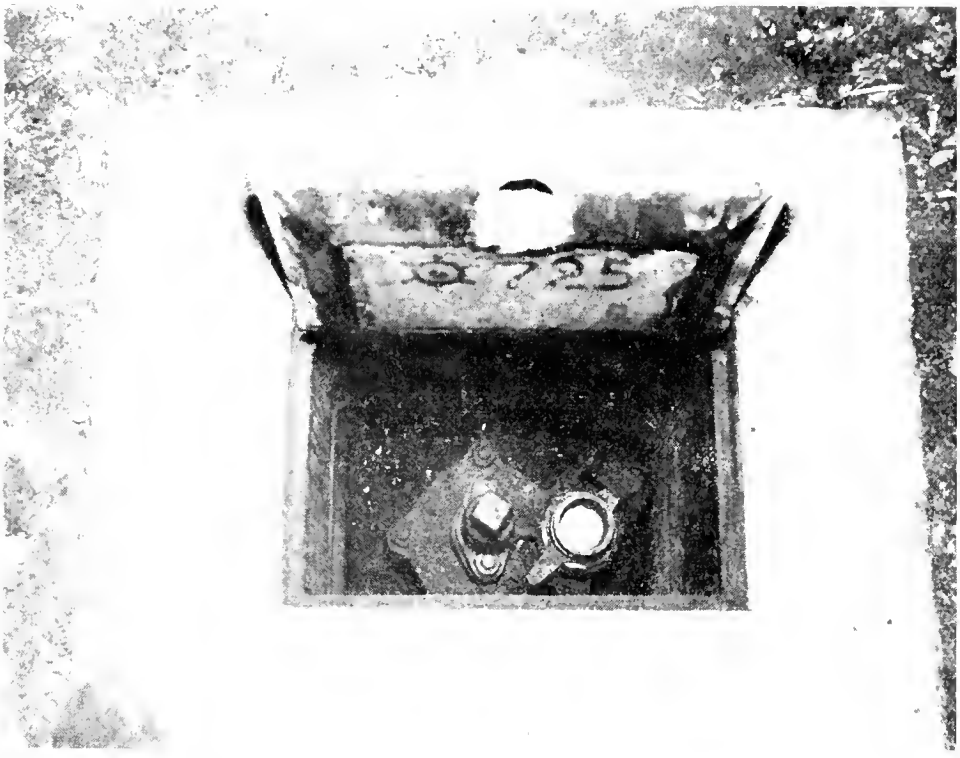
c. *Watch Tower.* All division, battalion and most of the large fire stations were equipped with watch towers from 60 to 125 feet high. The towers were located on top of, or adjacent to, the fire stations. In a few instances towers were placed on tall buildings in the immediate vicinity



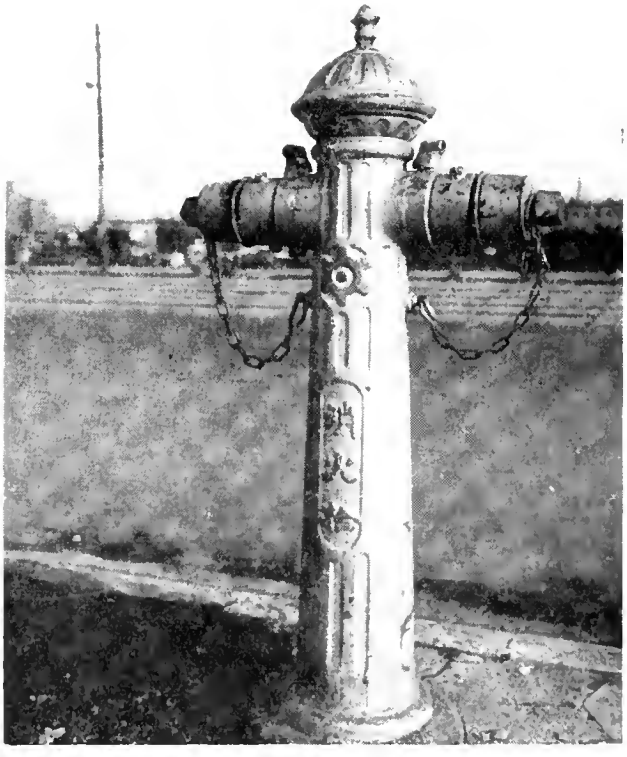
(Above) Electric fire alarm board in a battalion headquarters in Osaka.



(Left) Telephone fire alarm board in a fire station in Osaka.



(Above) Flush-type 2½-inch fire hydrant in common use in Japan.



(Right) Post-type 2½-inch fire hydrant found in a few large Japanese cities.

of the station. The watch tower was considered the most dependable means of detecting fires. Some of the fire chiefs estimated that 90 percent of all fire alarms in normal times, as well as during air raids, was discovered by tower watchmen. A 24-hour fireman watch was maintained in the towers, with the watch changing every hour. No effort was made to coordinate the towers and locate fires by triangulation. Each tower operated as a separate unit and the fire watchers were supposed to know their districts well enough to give a fairly accurate report by phone to their fire stations regarding the location of the fires.

d. *Messenger Service.* Messengers (junior firemen) played an important part in the fire departments' communications systems. Each telephone message concerning fires, or dispatch of equipment and men, was confirmed by a written message delivered by special messengers. During air raids there were many telephone failures, and message service was the only means of communications.

e. *Radio.* There were no radios used in the fire service, land or marine, in Japan.

8. *Mutual Aid and Mobile Reserve.* a. *Mutual Aid.* Mutual aid proved ineffectual. The principal difficulties encountered in dispatching fire apparatus over long distances (20 to 30 miles) were frequent motor failures, breakdowns and shortage of gasoline. There was a record in one prefecture of 60 pumpers having been sent to the aid of an adjacent prefecture and only two pumpers having arrived. On another occasion a prefecture dispatched 178 pieces of fire apparatus to a near-by city, but only 86 reached their destination and they had to be refueled upon arrival.

b. *Mobile Reserves.* No attempt was made to establish nationalized mobile fire-fighting units with highly trained personnel using standardized equipment as was done so successfully in England and Germany. The Japanese military had priority on all automotive equipment and man power in the nation and, as they were of the opinion that their homeland would not be subject to mass air raids, no preparation was made for additional fire-fighting equipment manned by well-trained personnel. Even the large cities and industrial plants were inadequately equipped with serviceable fire apparatus, and a large percentage of their equipment consisted of small pumping units acquired from communities outside the industrial sections.

9. *Water Systems.* a. *Source of Water.* Japan, which is six-sevenths mountainous with an area of 146,747 square miles equal only to the area of California, has unlimited sources of water. Its many mountain lakes and hundreds of rivers traversing the small coastal plains supply an abundance of water to the most densely populated districts of the world. The largest of these coastal plains (Kanto), containing the third largest metropolitan district in the world (Tokyo), had an average annual rainfall over a period of 30 years of 61 inches. Many sections of Japan have in excess of 100 inches of rain yearly. Ground water is always present at 5 to 20 feet below the surface.

b. *Storage of Water.* Large storage reservoirs were not generally considered necessary as there was a constant supply of water to the purification plants.

c. *Water Mains.* Water was supplied to the city distribution systems through canals, tunnels and pipes. The mains from the purification plants fed grid distribution systems through 18- to 70-inch cast-iron pipes. The business and industrial areas were well looped, cross-connected and equipped with isolation valves. There were, however, many dead ends in residential and outlying districts. The mains of the average distribution system were 2½ to 20 inches in size. The normal demand upon the mains was in many instances greater than their capacity, and at times pressure dropped to zero. The average householder provided himself with a small tank or half barrel which he kept filled by allowing a constant flow from the house faucet. This was done to assure the family water when it was needed for domestic purposes and fire-fighting use. Water mains were from one to four feet below the surface which made them vulnerable to high-explosive bombing.

(1) *Maintenance.* Water departments maintained specially trained crews for repairing breaks in mains. Supplies and repair equipment were strategically located about the cities, and emergency repair crews in some instances repaired damaged mains within 48 hours. This service, however, was not adequate to cope with large air raids.

(2) *Air Raid Damage to Mains.* A high-explosive bombing raid over Osaka in June 1945 knocked out the power supply to the pumping plant in addition to damaging many water mains, and there was no water in any mains for over a month. The damage to 19 principal mains had

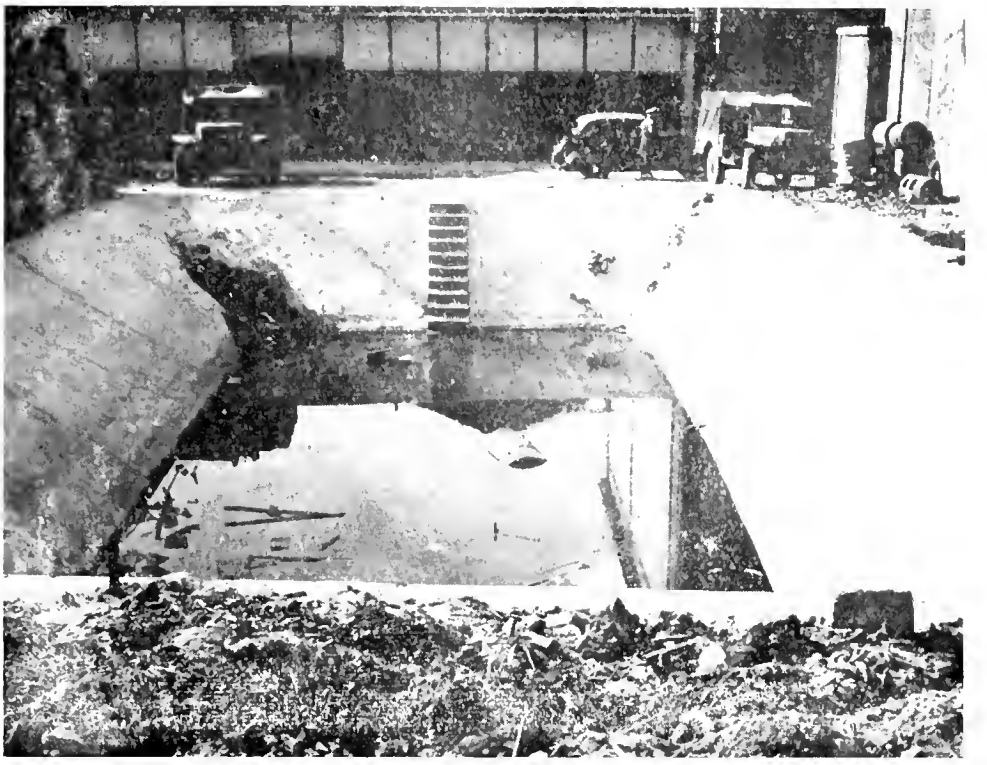
not been entirely repaired 4 months later. The atomic bomb in Nagasaki caused known breaks in three 4-inch, six 6-inch, two 12-inch, and one 28-inch cast-iron mains. The 28-inch main was 4 feet below the surface and located approximately one mile from the center of the bomb blast. In the parts of the city where water had not been restored to the distribution system there was no way of knowing the number of breaks in the mains. It was believed, however, that many damaged pipes were in those areas.

d. *Hydrants.* More than 90 percent of all fire hydrants in Japan was of the flush type (located below the street level and covered with a steel plate) with standard single 2½-inch hydrant outlets on 2½-inch to 4-inch risers (Photo Page 60.) There were a few double 2½-inch hydrant outlets in high valued districts and some post-type hydrants in the large cities. There was no adequate system in Japan of testing and maintaining hydrants. Many hydrants leaked and, being below the surface, the sumps were often full of water, which required firemen to make hose connections below water. Some modern buildings were equipped with exterior dry standpipes and 2½-inch hose connections. A few had 1½-inch interior wet standpipes equipped with 1½-inch linen hose.

e. *Wells.* Wells were plentiful in Japan, but little use was made of them in fire fighting. In Kobe alone, there were 20,000 wells which had pitcher pumps or rope and buckets to draw water, and their only fire-fighting use was for filling small water tanks. Some large buildings and factories used wells with power pumps to supply their own needs. Nagasaki had 10,000 wells that averaged 3 feet in diameter with a water level of 3 to 20 feet. Many of these wells could have been used for fire fighting, but no survey had been made to determine where drafting could be done. Kyoto was the only large city investigated which had made plans for the use of wells in fire fighting. One hundred eighty-three wells, 6 feet in diameter, with a maximum water level of 15 feet, were listed as available for drafting purposes in an emergency. Wells were seldom used to augment the regular water distribution systems.

Fire department suction hose sump in shallow stream in Kyoto.

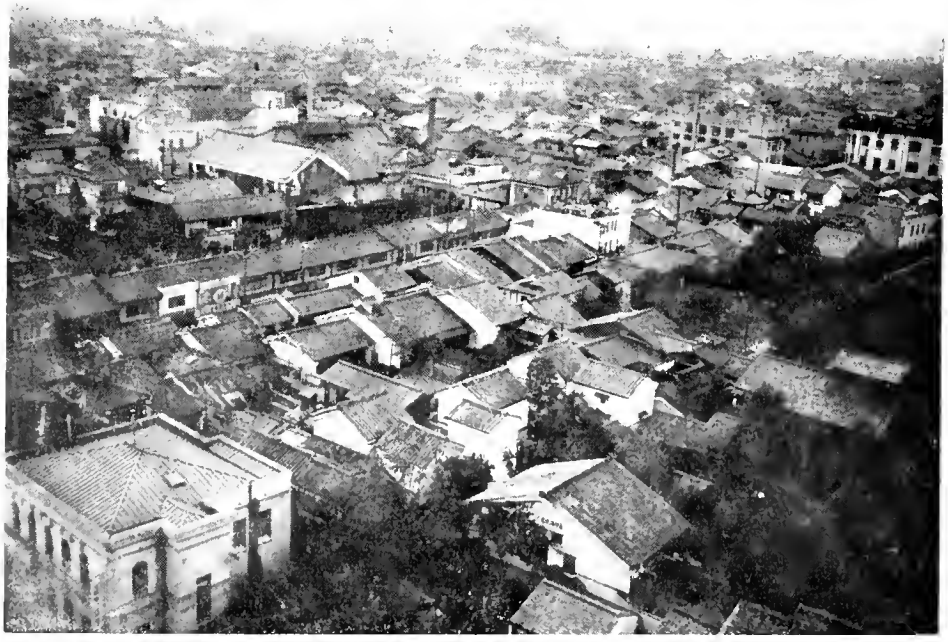
f. *Other Sources of Water.* Most of the principal cities were traversed by canals, moats and rivers with an unlimited quantity of water which could have been used in drafting water for fire



Static water tanks, 27,500-gallon capacity, for emergency use in fire fighting.

(Left) The narrow streets and wooden buildings of Kyoto, Japan's only large city not bombed, as illustrated, are evidence of the type of construction in the highly congested areas.

(Below) The same residential area as seen from the roof of a near-by modern building.



fighting. In many places along these streams the banks and bridges were too high for fire pumps to lift water, and pump platforms were not provided. Some small streams were too shallow to cover suction hose, and Kyoto was the the only city which attempted to correct the condition by installing covered sumps in beds of shallow streams (Photo, Page 62.) Concrete reservoirs (static tanks), both open and covered, were used extensively for auxiliary water supply. The average capacity of these tanks was 27,500 gallons, but they were too small to furnish an adequate quantity of water for controlling large fires (Photo Page 63.) They were filled from fire hydrants in the immediate areas. Neighborhood groups were supplied with wooden barrels with capacities of 300 to 1,500 gallons, and concrete tanks of 70-gallon capacity.

Fire Prevention

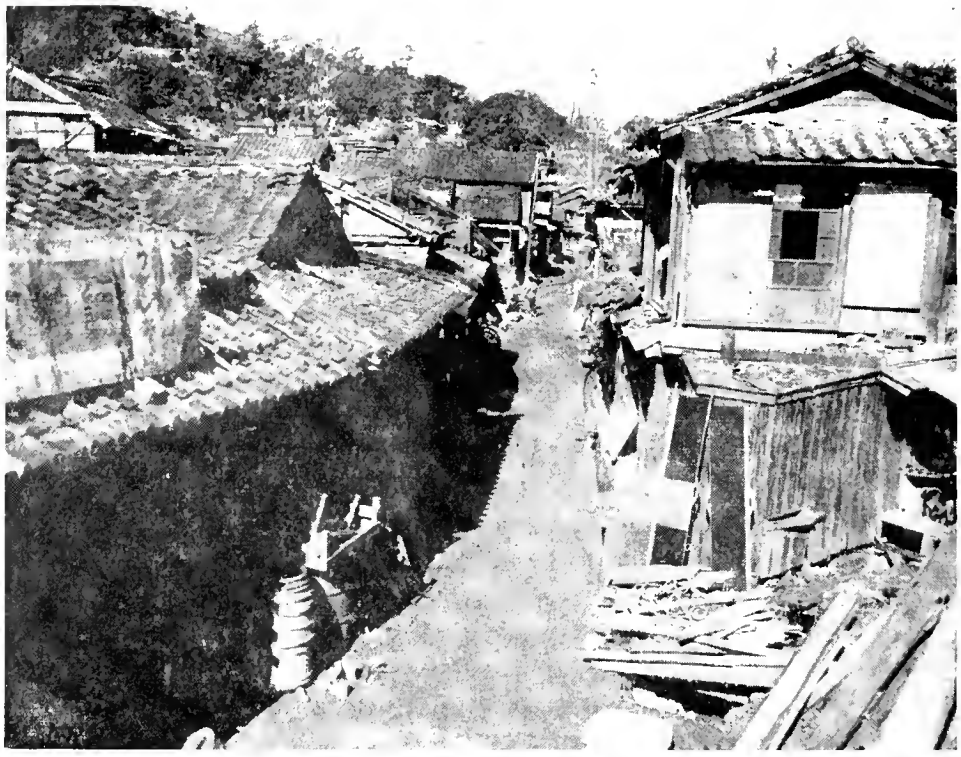
10. *Fire Prevention.* The term "fire prevention" had an interpretation in Japan different from that in the United States. To the Japanese it meant not only preventing fires but also the methods and tactics used in extinglishing fires. There were no organized fire-prevention bureaus with trained inspectors such as are commonly found in fire departments and insurance inspection offices in the United States. All matters pertaining to precautionary measures, to fire-fighting regulations and even to building restrictions were enforced after a fashion by the police. The fire departments had no authority to enforce corrective measures, but they were permitted to call to the attention of the police any hazardous fire conditions noted. The police, if they so desired, could enforce the few meager fire-prevention laws and ordinance which were broad in scope and interspersed among the building regulations promulgated by the Minister of Home Affairs. As a result of the devastating earthquake and fire of 1923, steps had been taken in reconstruction to mitigate the effects of such a disaster. In Tokyo, for instance, in rebuilding the city, 3 large parks and 50 smaller ones were laid out to serve as fire breaks and places of refuge for persons whose homes might be burned out. Also, six new avenues, 120 feet wide, and 120 new streets, were cut through the city. These changes were highly beneficial from a fire-prevention point of view. There remained, however, the great density of population and the overcrowded slums with their flimsy houses built wall to wall, block after block, with streets of 12 to 20 feet separating blocks. This condition was common in all principal cities of Japan (Photos, Pages 61 and 66.) Modern office buildings were to be found flanked by narrow streets and crowded alleys that had not changed for many years.

11. *Building Construction.* The principal cities of Japan had in their main business districts westernized, fire-resistive, earthquake-proof buildings. In spite of the planning and progress, however, the wood and paper houses of the workers were around the modern buildings. The condition was aggravated by the drastic lowering of the few building restrictions during the depression in Japan from 1927 to 1931 and, finally in 1938, the use of steel was prohibited in all private construction. Therefore, at the time of the air raids, 98 percent of all buildings in Tokyo, Japan's most modern city, were of wood and paper, with the result that the B–29 incendiary raids virtually levelled the city. The same situation and result prevailed in all other important cities of the country which were subjected to bombings.

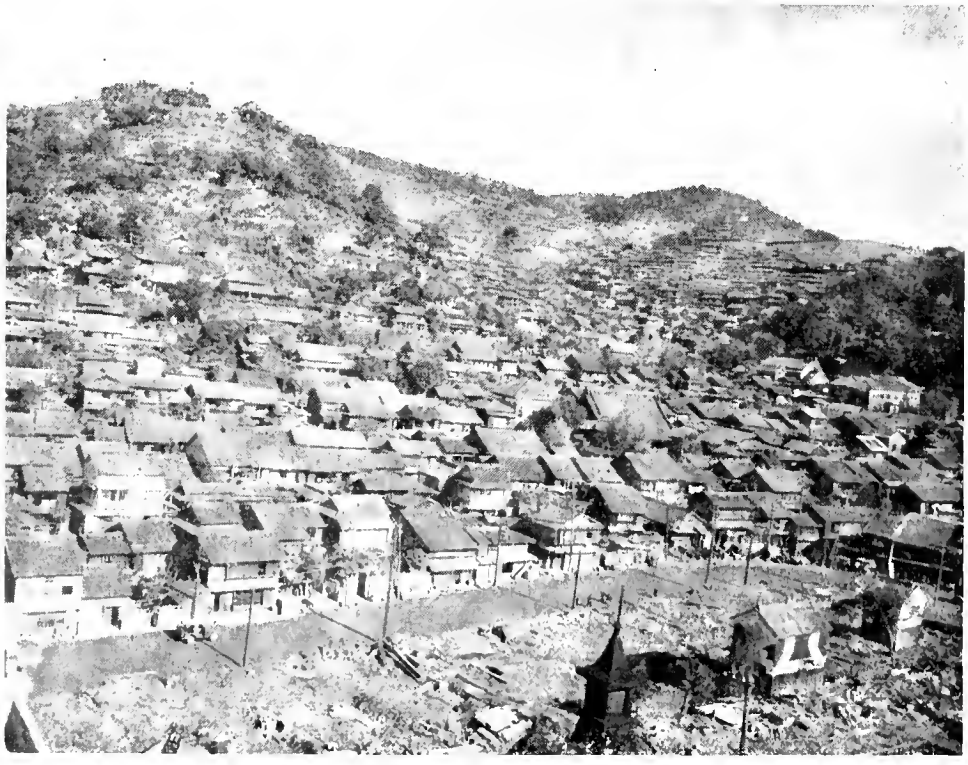
12. *Building Code.* The Ministry of Home Affairs regulated building laws in all Japanese provinces. Some consideration was given to zoning for business, industrial and residential districts. The first building code was published in 1919, and was made up of extracts from the building codes of cities like New York, London, Berlin and Chicago. The code, however, had little effect on construction, enforcement being in the hands of the police. There was great laxity in enforcement of regulations; even in business districts most of the modernization and improvements were due solely to the owners' desire to protect their own properties and, in some cases, to become eligible for insurance coverage by British firms. The building code was revised after the earthquake in 1923. It was, nevertheless, still inadequate and inconsistent. The Minister of Home Affairs delegated the power to issue building permits to the police department because it was in a better position to enforce compliance with the regulations.

a. *Zone "A"* covered the business sections, the downtown areas which were the modern parts of cities with fire-resistive, earthquake-proof modern buildings from one to eight stories. (Height limit for buildings in Japan was 100 feet.)

b. *Zone "B"* comprised the business areas in or adjoining the residential sections. The regu-



Slum district in Nagasaki protected against the atomic bomb by hill in background. Street too narrow for use of fire apparatus.



Nagasaki residential district not burned by fire caused by atomic bomb.

tions were similar to the Zone "A" regulations, but limited the height of buildings to 65 feet, and specified outer walls of fire-resisting materials, wired-glass on metal frames or steel window shutters, doors swinging outward, and interior wet standpipes with 65 feet of linen hose.

c. *Zone "C"* covered the residential sections of cities. The building code was very flexible regarding the type of material to be used, but it did specify that abutting properties should be at least 3 feet apart. Where that regulation could not be complied with, the abutting walls were to be back-plastered with a fire-resistive cement. Heating units, stoves, flues, and the like (which were very few compared to the number of buildings) were covered under the code, and specifications regulated the distance from walls to floor. Wherever possible, properties were to be protected by the erection of fire-resistive walls, approximately 7 feet in height, around individual residences, but that provision was not mandatory.

d. *Theaters and Places of Public Assembly.* The building code placed some emphasis on motion picture houses and auditorium, but requirements were far below the standards of most American cities. They specified emergency exits, center and side aisles, fire-resistive motion picture booths, quick-closing, manually-operated coverings for projection ports, and soda-acid extinguishers to be strategically located about the building.

e. *Inflammable Liquids.* The building code regulated the handling, transportation and storage of inflammable liquids. It was subdivided into provisions for storage or handling of quantities over 211 gallons (800 liters), and for the handling of between 10 gallons (40 liters) and 211 gallons. Where large storage tanks were located, the erection of walls of fire-resistive construction and 6 feet high was required. The regulations for inflammable materials were specific but not up to date.

f. *Hazardous Chemicals and Explosives.* The police boards were responsible for the enforcement of regulations set up in the code for handling, storing and manufacturing hazardous chemical and explosives. Acids were required to be stored in separate fire-resistive buildings with proper ventilation. The manufacturing of chemicals was confined to class "B" industrial areas set up for hazardous manufacturing only. The storing, handling and manufacturing of dynamite and high explosives were well regulated under army supervision.

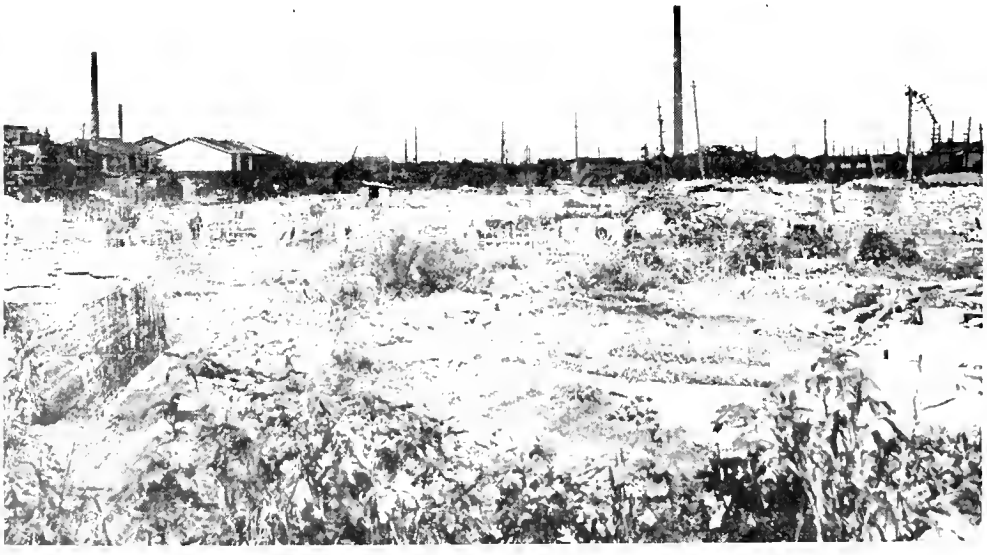
g. *Sprinkler Systems.* The building code called only for some form of fire protection, but building owners in a few cases, particularly in knitting mills, had installed automatic sprinkler systems and standpipes.

h. *Electric Code* was a part of the building code. It provided protection against electrical hazards to buildings, their contents, and occupants. It regulated primary and secondary supply wires and related equipment and covered other subjects such as switches, switchboards, lamps, sockets, appliances, motors, hazardous locations, transformers and lightning arrestors.

i. *Wartime Building Regulations.* The Ministry of Home Affairs in April 1941 issued a résumé of laws and general rules pertaining to building construction and protective measures against air raids. It was not until after the March 1945 large-scale air raids that much effort was made to comply with some of these regulations such as reinforcing foundations and roofs, covering windows, removing ceilings to leave attics exposed, covering openings under the eaves with plaster, and the like. In cities where some of the added protective measures were completed before the March 1945 incendiary raids, the records indicated that there had been little success in controlling the spread of fire. In Kobe, for instance, of 30 prominent buildings so protected, 23 were burned, 7 were still intact but 5 of these were in districts not involved in fire, and the other two were schools which had had the additional protection of fire breaks made by the removal of nearby wooden buildings. In Osaka, however, the Shimi Physical and Chemical Research Institute, a limit-height, reinforced concrete building received 49 direct 6-pound incendiary bomb hits in four air raids but did not burn because the roof was protected by 8 inches of concrete.

13. *Firebreaks (Demolition of Buildings).* Beginning in 1941 and continuing until near the conclusion of the war, firebreaks were created in important cities by demolishing wood structures in certain areas. The plan called for the removal of buildings to create two types of fire breaks. The first type consisted of lanes 36 to 120 feet wide in highly congested residential and business districts. In some instances these lanes were several miles long (Photos Pages 68 and 69.) The

Firebreaks constructed by removing buildings on both sides of a street in Osaka. Incendiaries were dropped on both sides of the firebreak, burning out the area.



The demolition of buildings around a plant in Osaka, as illustrated, saved it from destruction by fire.

second plan was to protect important buildings and plants by removing inflammable material around them for a distance of 100 to 200 feet. In five important cities studied a total of 346,629 buildings was demolished in the firebreaks program. In most instances fire lanes were too narrow to prevent flames from jumping them, and saturation bombing completely nullified the purpose of these lanes as fires were started on both sides of them. They did, however, provide avenues of escape for the public. About 10 percent of the important buildings protected by firebreaks were saved from fire but, it must be noted, these buildings had additional protection in the form of massed fire equipment at the expense of less important areas.

A wide firebreak created in Kyoto by removing hundreds of buildings for a distance of several miles.

14. *Weather.* a. *Precipitation, Humidity and Fog.* Over a period of 30 years the Tokyo area had an average annual precipitation of 64 inches: there were 149 rainy days, snow fell on 14 days and 20 days were foggy. Over this same 30-year period the relative humidity averaged 74 percent. The high humidity and great number of rainy days in Japan may have been the prime factors in the small number of fires recorded in the densely populated and highly inflammable cities in normal times. To the Occidental it was inconceivable that a city the size of Tokyo with seven million people, many of whom were packed into the worst type of slum quarters, could have had only an average of 1,000 fires per year (normal times) when metropolitan American cities record 10,000 to 25,000 fires annually.

15. *Operations Under Air-Raid Conditions.* a. *Prearranged Fire-Fighting Plan.* The battalion districts of the large city fire departments (with the assistance of the volunteer firemen) operated as independent fire-fighting units. The battalion chiefs in adjacent districts could, however, at their own discretion dispatch reinforcements of apparatus and men in extreme emergencies. Fire-fighting units were not controlled or coordinated from a central headquarters. Chiefs of police affairs had been advised by Japanese army intelligence that American bombers would always fly in formation at high altitudes and drop their bombs in a particular target area. On this information it was thought that by means of fire breaks created by removing houses, plus the available fire-fighting equipment and personnel,

any fires created could be confined to the particular areas bombed.

b. *Actual Operation.* The B–29 saturation incendiary raids which began in March 1945 did not follow the pattern expected by the Japanese. The B–29's did not fly over Japanese cities in formation but came singly and in groups of three at low levels from all directions at intervals of 20 to 45 seconds and continued the operation from 1½ to 3 hours. Consequently, thousands of fires were burning in all parts of the cities almost simultaneously. Communications systems were knocked out, water pressures in fire mains dropped to near zero, fire fighters, fire stations, and even large areas were surrounded by converging flames. The smoke was so dense that even firemen who knew the cities well became lost. This condition caused tremendous confusion among the people attempting to find safety. Auxiliary firemen became more concerned in attempting to protect their own properties or to escape burning areas than in operating as members of organized fire-fighting units. With the communications system out of operation and messengers unable to get through to the various fire stations, the fire companies operated in a haphazard manner, losing much of their apparatus either because they were surrounded by fire or because they lacked the fuel to move out of the path of the flames. The tremendous fires caused near panic which was accelerated when a few high explosives were interspersed with the incendiaries. Even firemen left their equipment to seek shelter when high-explosive bombs were dropped. The devastating raids beginning in March 1945 broke the fighting spirit of the home fire-fighting front. Auxiliary police and fire units discontinued drills and professional firemen were discouraged and blamed the military for their fire losses and failure. (See Exhibit *D* for report on a great air raid, taken from archives section of Ministry of Home Affairs.)

16. *Typical Incendiary Air Raids.* a. *Tokyo Air Raid of 10 March 1945.* (1) The first saturation incendiary air raid struck Tokyo during the early morning hours of 10 March 1945. The wind velocity at the beginning of the bombing was about 4 miles per hour but as the fire became more intense and the spreading fires merged, the velocity increased to hurricane proportions making it difficult to stand up. This condition was to be expected as all great fires tend to create a cyclonic effect.

(2) This raid caused the greatest destruction ever visited upon any city. A total of 83,793 persons lost their lives. People running for refuge were trapped by the bombings ahead and around them and were encircled with flames and black smoke. They looked for protection to the canals and rivers but in some districts the shallow canals were boiling from the heat which seemed to be compressed by the wind, and the canals were full of people. In some places one swarm of humanity after another crowded into the water and by the time a third or fourth wave of frantic people had jumped, the first wave lay on the bottom. Those who survived the ordeal were burned around the head and neck by the constant rain of sparks.

(3) Fire-fighting equipment proved pitifully inadequate. The firemen rushed to a burning area and worked until the fire there got beyond their control, then they went elsewhere. They tried to concentrate their efforts on the big factories but the results were almost unnoticeable. Ninety-six fire engines, 150 hand-drawn gasoline-driven pumps and 1,000 sections (65 feet per section) of hose were burned. Eighty-five firemen were dead from the fire, 40 missing, and the casualties of auxiliary police and fire units amounted to more than 500. Forty percent of the capital city was burned to the ground.

b. *Tokyo Air Raid of 13 and 14 April 1945.* This incendiary raid mixed with a few high explosives was very much the same as the 10 March 1945 attack. The loss of life was small compared with the previous raid as people escaped to the burned-over areas. The property damage, however, was enormous and left practically the entire city in ruins.

c. *Osaka Air Raid of 14 March 1945.* The saturation incendiary raid over Osaka (Japan's second city) 4 days after the first large bombing of Tokyo was almost an exact duplicate in destruction of the Tokyo raid. Sixty percent of the city was aflame almost immediately; communications systems were out; water pressure in fire mains was near zero, and fire-fighting units were surrounded by fire.

d. *Kobe Air Raid of 17 March 1945.* This raid caused such havoc that more than 68,000 homes were completely destroyed and 242,466 people were made homeless, according to Japanese sources. All available fire apparatus in the prefecture, in addition to 86 pumpers from Osaka prefecture, were of little value in controlling the hundreds of fires in all parts of the city. The

auxiliary firemen soon gave up their posts to seek shelter away from the heat and smoke. The limited gasoline supply for fire apparatus caused much of the equipment to be abandoned. A total of 116 fire pumpers burned in four air raids.

17. *Hiroshima Atomic Bombing of 6 August 1945.* The city of Hiroshima, for over a mile in all directions from the ground zero point of the bomb explosion, was laid low and, except for the charred and tangled mass of wreckage which remained, was almost completely obliterated. The engines out of 44 within a radius of a little more than a mile were completely destroyed and several others were damaged. Although many members of the department were killed, there still remained a sufficient number of trained men to handle the apparatus which were operative. By the time they might have reorganized, however, the conflagration had reached such proportions that any effort they could have made would have been futile.

18. *Nagasaki Atomic Bombing of 9 August*

Demolished fire truck was all that was left of fire station in the immediate area of atomic bomb blast in Nagasaki. Twelve firemen were killed in this station.

effect of the detonation and the shock incident thereto were so great that little or nothing was, or could be, done to prevent or stay to ensuing conflagration which reached its peak within 30 minutes after the explosion and continued until it burned itself out. Because of the time of day when the bomb exploded (shortly after 0800) meals were being prepared over fires in many homes. Unquestionably numerous fires were started by debris falling on these open flames, thereby assisting materially in the spread of the conflagration. Fire engines in Hiroshima had been moved previously to locations near important buildings and, when the bomb struck, 10 fire

1945. The fires following the atomic bombing of Nagasaki spread in all directions from the blasted area. The instantaneous heat wave preceding the blast burned people and scorched wood surfaces, particularly telephone and power poles on the exposed side, for a distance of 2.6 miles in all directions from the center of the blast area. Many wood-frame buildings within the area were completely destroyed by the blast but showed no signs of destruction by fire. Most of the fires caused by the atomic bomb were probably of a secondary nature. The flimsy and highly inflammable materials that might have been ignited by radiation from the bomb explosion did not burn because

be fire was probably snuffed out by the blast which immediately followed. (See Pages 71 and 72 for illustrations of the effects of bomb blast.) Fire fighters made no attempt to enter the de-

cers who had not been too successful in police work and were palmed off on the fire department as administrators and fire-fighting officers. Regular firemen with long years of service were resent-

Concrete smoke stacks as illustrated were knocked down by the atomic bomb—a condition which was not noted elsewhere by high-explosive bombing.

stroyed areas, owing to the turmoil and confusion within the city, and by the time uninjured fire fighters regained their composure, fires had kindled in blasted buildings and were racing in all directions. At the very height of the fire the wind reversed its direction and fanned the flames back toward the burned-over area. The prefectural building and homes on the north side of the national highway were thus saved from burning. One fire station was completely destroyed by the bomb blast, and the remaining four stations had their windows, doors, ceilings and roofs damaged. Twelve firemen were killed outright by the atomic bomb and 28 were seriously injured, some of whom died later. (See Page 71 for illustration of fire station in which the firemen were killed.)

19. *Comments.* a. *Fire Department Organization.* The Japanese fire services were not well-planned and organized as fire-fighting units. Chiefs and high ranking officials charged with fire protection were for the most part police offi-

ful of the police control and general administration of their departments.

b. *Training.* Fire-training-school instructors were inexperienced in modern fire-fighting techniques and subjects, such as hose and ladder evolutions, pump operations and maintenance, ventilation, overhauling, salvage, rescue, water systems, alarm systems, building construction, fire prevention and related subjects. Recruit firemen were trained almost entirely in military drills and physical exercises. Their practical fire drills consisted of a simple hose and ladder evolution.

c. *Equipment.* Fire-fighting equipment in common use would not compare favorably with that of small town volunteer fire departments in the United States. Fire pumps of from 350- to 500-gallon-per-minute capacity, with meager tools and appliances, were standard equipment in Japanese fire departments. Mobile fire rigs, such as salvage, light, rescue, foam, CO_2, demolition,

air field crash trucks, even water tanks with booster pumps, were unknown to Japanese firemen. The ordinary first-aid fire extinguishers of the CO_2, carbon-tetrachloride, foam, and water-pump-can types were not a part of the Japanese fire equipment. Marine sections of the fire departments were as poorly equipped and trained as land companies, and shipboard fire fighting was not a part of their training. Small fire boats with maximum pumping capacities of 500 gallons per minute were inadequate to control the large fires to be expected under normal conditions along the water fronts of important harbors.

d. *Water Systems.* Full use was not made of the unlimited water supply in Japan. Fire mains and hydrants were too small and too few. Isolation valves were not well located, and breaks in the mains during emergencies caused large and important areas to be without water or with pressures too low to be of much value in fire fighting. Many rivers, canals, moats and wells were without approaches for drafting water by fire pumps. Static water tanks were used extensively for auxiliary water supply but they were too small to be of real value in controlling large fires.

e. *Fire Alarm Systems.* Electric fire alarm systems were obsolete and inadequate. Each division and battalion district in large cities operated as an individual fire department with little or no coordination among districts. Central alarm office control was not successfully carried out because of poor reception over the antiquated and poorly maintained phone system. Two-way radio communication was not attempted in fire departments, and the discovery and reporting of fires were done mostly from watch towers and by bicycle messengers. Thus fires often advanced beyond their incipient stage before fire apparatus was dispatched.

f. *Depletion of Experienced Fire-Fighting Personnel During the War.* Able-bodied men with years of experience in the fire service were inducted into the armed services and their positions were filled with inexperienced and untrained firemen of low physical and mental qualities. Skilled auto mechanics were the first men drafted into the army and navy, which was probably the prime reason why 20 percent of all fire-fighting equipment was constantly out of service during most of the war years.

g. *Auxiliary Police and Fire Units (Keibodan).* Fire-fighting organizations in small towns and villages depended entirely upon the auxiliary police and fire units for their fire protection, and in some instances these groups were as well equipped and trained as the regular fire departments in larger cities. Auxiliary firemen in cities subjected to saturation bombing were as ineffectual in their fire-fighting efforts as were the regular firemen.

h. *Student Volunteer Fireman (Gakuo Tai).* Students exempt from military service and assigned as voluntary firemen in fire stations were reported by fire officials as being the most capable, willing and courageous volunteer fire fighters in Japan.

i. *Fire Inspectors and Fire-Prevention Codes.* The lack of organized fire prevention bureaus with trained fire inspectors, and the nonexistence of fire-prevention codes were in keeping with the unpreparedness of the Japanese in fire protection.

j. *Building Construction.* The few modern-type buildings were constructed by private interests for their own protection, rather than in compliance with building laws. Even these buildings were in many places surrounded by the typical Japanese buildings of flimsy wood construction which made the exposure hazard great.

k. *Demolition of Buildings.* The demolition of buildings to create fire breaks was of little value as protection against saturation incendiary air raids. Not more than 10 percent of the important buildings so protected were saved from fire. The cross city lanes created by demolition of buildings did not prevent the spread of fire as bombs were dropped on both sides of the fire breaks. They did, however, provide avenues of escape for the public.

l. *Mutual Aid.* The few attempts in the use of mutual aid were unsatisfactory, as fire equipment from neighboring communities arrived hours too late, ran out of gasoline or broke down out on the road and did not arrive at all.

m. *Gasoline Rationing of Fire Department.* Fire departments were not given sufficient recognition in the distribution of meager gasoline supply. Many fire trucks burned during big fires for lack of fuel to move them out of conflagration areas.

n. *Conclusion.* Japanese firemen and auxiliary firemen with their inadequate training and equipment fought fire to the best of their ability until high-explosive bombs were dropped along with incendiaries and then they abandoned their equipment and took cover. Considering the over-

all conditions in Japan—its highly congested and inflammable areas; its inadequate water systems and antiquated alarm systems—a modern fire department could not have coped with the hundreds of simultaneous fires created by the large scale incendiary air raids.

F. EMERGENCY MEDICAL SERVICES

1. *Introduction.* a. The facts forming the basis for this report were gathered in studies of Osaka, Kobe, Kyoto, Nagasaki and Tokyo, for each of which an individual target report has been submitted. Generally speaking, the methods and techniques employed in these several localities followed a uniform pattern, which was to be expected because of the fact that planning was essentially a function of the central government. Also, authority for the execution of the medical aspects of civilian defense stemmed from centralized sources. To a large extent, however, only the general plans and policies were dictated by the Tokyo government, and the adaptation of these plans was left to the local units of government. It was natural, therefore, that in the surveys of the several target areas some differences in the administrative procedures should have been observed. The variety of targets studied, however, was such as to afford a fair cross section of Japan's best efforts to furnish medical aid to the civilian population in emergencies arising from bombing and bombardment.

b. From the beginning of the sustained attacks upon the Japanese home islands to the close of hostilities, the civilian defense forces faced a great variety of problems, ranging from minor raids with few casualties to the great raid upon Tokyo when approximately 80,000 persons were killed. Different types of raids also caused different types of casualties. By far the commonest were the incendiary raids which killed by suffocation and heat and yielded enormous numbers of nonfatal casualties from burns. From the comparatively few demolition bombs the casualties were principally due to direct violence causing lacerations and fractures. But the most sensational and perhaps the most dangerous of all were the atomic bomb explosions which laid waste everything within their effective range and gave rise to casualties not only from burns and blasting, but also from radiation effects.

c. The objective of the studies upon which this report is based was to determine first the nature and extent of problems encountered by the Japanese in the field of human casualties and, second, the methods employed and their degree of effectiveness in meeting these problems. As will be seen from the discussions which follow, the sheer magnitude of the destruction wrought by air attacks upon Japan has rendered obsolete many of the generally accepted plans for prevention of, and care for, civilian casualties in time of war.

d. The term "Emergency Medical Services" as used in this report denotes all of the organized emergency activities, with the exception of gas defense, instituted and maintained by the medical and allied professions for the alleviation and care of human casualties resulting from enemy action. First-aid facilities and emergency hospitalization are discussed jointly under the head of "Emergency Medical Service" which constitutes the first subdivision of "Emergency Medical Services." The other two subdivisions are "Red Cross Service" and "Mortuary Service," respectively.

e. The adoption of emergency measures for relief of human casualties had no clearly defined date of origin. The program came into existence by slow evolutionary stages rather than being born fully developed. Air-raid maneuvers designed to make the public air-raid conscious were recorded in newspaper accounts dating back to the middle of July 1928. The first documentary evidence obtained to show a public interest in this subject in the form of instructions relative to organization for first-aid services bears the date of July 1941. The director of the mortuary service in Tokyo stated that 5 years previously the military authorities had estimated that there might be as many as 30,000 dead per year in Tokyo over and above the normal death expectancy. Thus it is clear that plans for emergency care of casualties were taking concrete form before the attack on Pearl Harbor. On the whole, however, the earlier stages of the emergency medical program were indicative of offensive rather than defensive thinking. In view of the propaganda by which the people were led to believe that the war was being progressively won by Japan and that the home islands would never be invaded, it is quite remarkable that any interest at all was aroused in defensive measures.

Emergency Medical Service

2. *Introduction.* All grades and types of nonfatal injuries resulted from the air raids in Japan, ranging from slight to grave. For the former,

emergency first-aid facilities were sufficient, but for the latter hospital treatment was necessary. All phases of emergency treatment, therefore, are covered in the discussion of "Emergency Medical Service." In this section attention is devoted to the first-aid services and to the hospital services.

3. *Organization.* The emergency medical service of Japan was organized under the jurisdiction of two separate ministerial offices: the Ministry of Welfare (Kosei Sho) and the Ministry of Home Affairs (Naimu Sho). The two national offices, working in conjunction with each other, sent orders and directives to the prefectural governments relating to the organization and maintenance of an air-defense medical program to care for air-raid casualties on the Japanese mainland. At the prefectural or local level the responsibility for establishing an air-defense medical setup was vested in the governor who delegated this part of the Japanese defense program to the prefectural health section (Eiseika), a subsidiary of the prefectural home affairs section (Shomuka). The prefectural police department (Keisatsu Bu) worked in close liaison with the health section to see that orders and directives were executed. All doctors, dentists, nurses and midwives were organized into their respective professional associations and each assigned according to individual qualifications to the various medical installations that were created to care for air-raid casualties. First-aid squads (Kyugohan) of the auxiliary police and fire units (Keibodan), volunteer workers of the neighborhood group (Tonari Gumi), and special school patriotic units (Tokubetsu Gakko Hokokutai) furnished "on-the-spot" emergency first-aid treatment to the air-raid victim (Organizational Chart, Page 76).

4. *First-Aid Services.* a. *On-the-Spot Treatment.* The first medical group to go into an area that had been bombed were volunteer workers from auxiliary police and fire units, members of school patriotic groups and volunteer workers from neighborhood groups. Treatment consisted of elementary first-aid procedures such as bandaging, splinting, stoppage of hemorrhage and artificial respiration.

b. *Transportation and Evacuation of Casualties.* As soon as possible after air raids, casualties were given "on-the-spot" treatment and separated into various categories of injuries by the first-aid groups mentioned above. Casualties whose injuries were very minor were treated and sent to their individual homes, while those more seriously wounded were given first-aid treatment and sent to near-by first-aid stations (Kyugosho) or directly to first-aid hospitals. Because of the scarcity of mobile equipment, patients were usually transported from the scene of disaster to first-aid stations and hospitals by litter bearers. Ambulances were practically nonexistent by the end of the war and the role played by them in the transportation problem was negligible. Small numbers of trucks were available for transporting wounded through transportation pools operated by the local governments and dispatched to the scene by a central control room of the prefectural police departments. In many instances streets within the devastated areas were impassable to trucks and other vehicles because of the post-raid debris and crowding by masses of people.

c. *First-Aid Stations.* As early as 1941, plans were being formulated for establishing first-aid stations at strategic points within the large cities of Japan. First-aid stations were to be located in treatment rooms of public school buildings but, in April of 1942, after the first air raid over Tokyo, this plan was modified in some localities by shifting them to doctors' offices and the smaller hospitals. In locating the first-aid stations the objective was at all times to disperse them at strategic points and in accordance with the concentration of population. This policy was clarified and other specific standards were established in a directive issued by the Ministry of Home Affairs in November, 1941, as follows:

(1) First-aid stations shall be established for each 5,000 to 10,000 population.

(2) Physicians' offices shall be used for first-aid stations but when these cannot accommodate all of the injured, stations will be set up in schools, public halls, hotels and other similar and appropriate institutions.

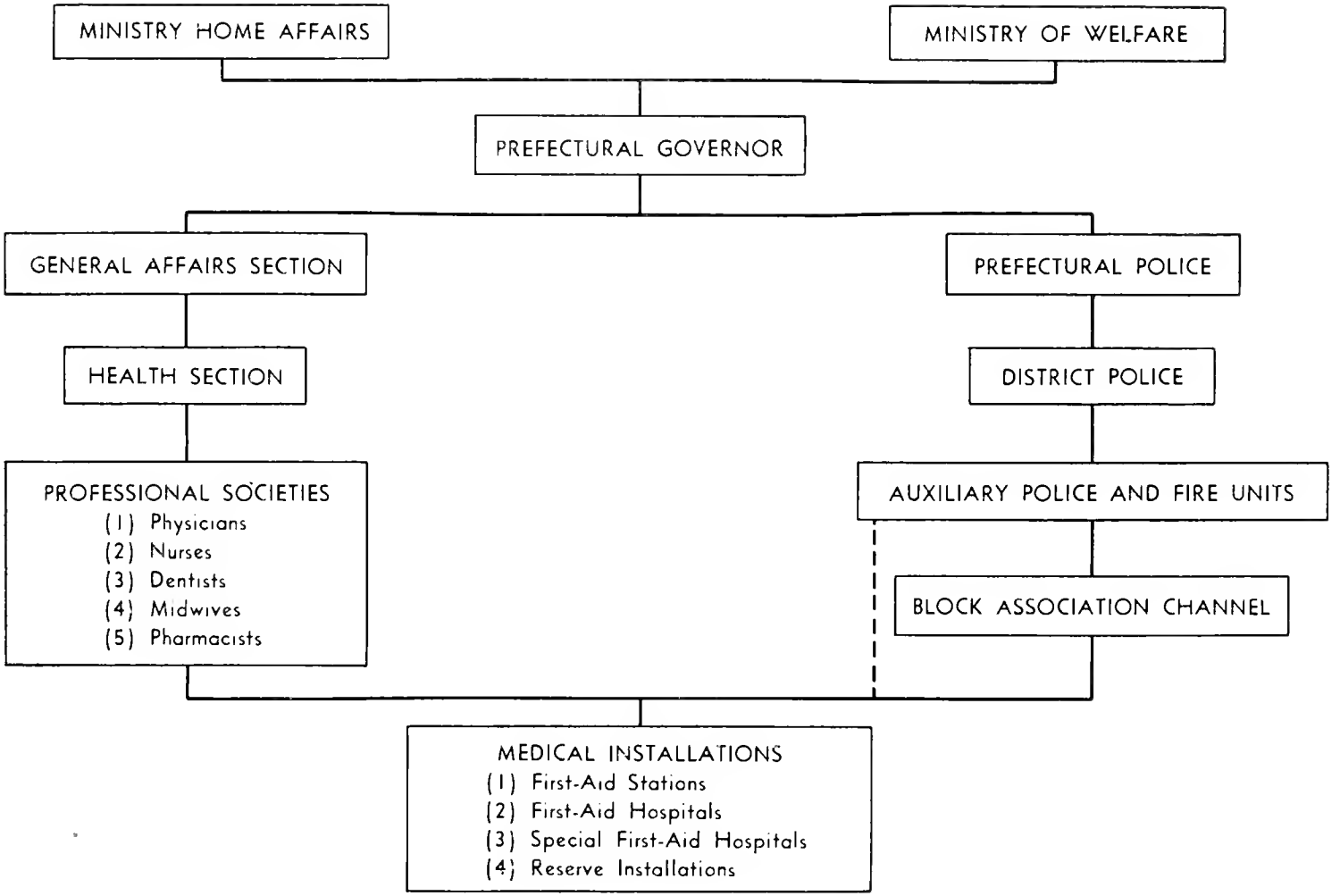
(3) First-aid stations must be located along the roads and streets so that they are easily accessible to all persons.

(4) A shelter must be in close proximity to the first-aid station to accommodate those casualties awaiting treatment.

(5) First-aid stations shall have a lighted, marked lamp at night.

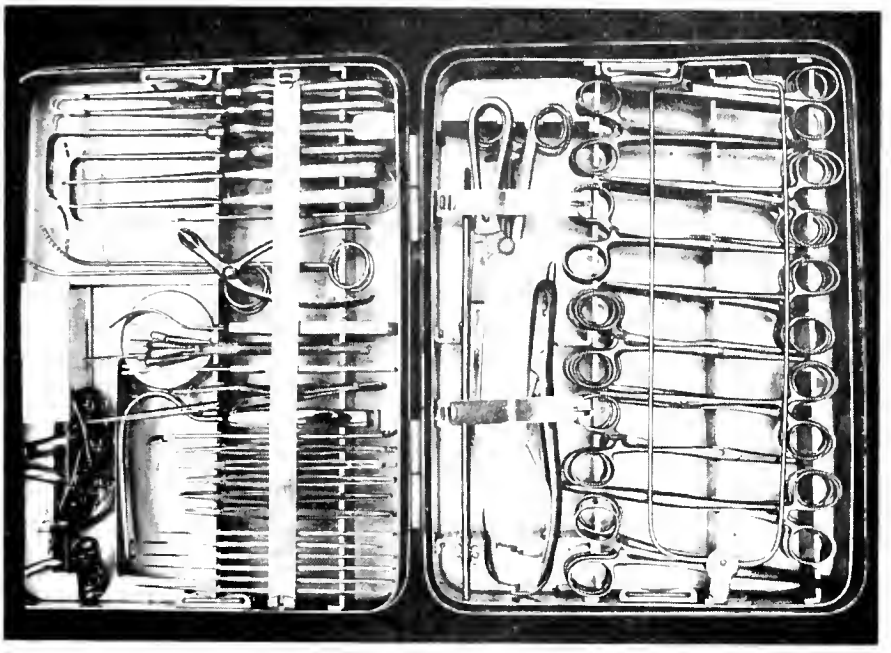
(a) *Personnel of First-Aid Stations.* In charge of each first-aid station was a physician appointed by the local prefectural health section chief. On the average, depending upon the population of the district served, there were 3 to 5 doctors,

ORGANIZATION—EMERGENCY MEDICAL SERVICE OF JAPAN



2 dentists, 1 pharmacist, and 10 nurses in each station. When an air-raid "alert" was sounded certain predetermined first-aid service members proceeded to their appointed posts and awaited developments, and others were called in, if it was considered necessary. At the air-raid "alarm," all first-aid personnel proceeded at once to their posts of duty.

possessed by the first-aid stations usually included, however, cotton, gauze bandages, disinfectants, splints, medications for treatment of burns, some opiates and heart and respiratory stimulants. A very small and insufficient amount of antitetanus serum was available for use. There was no blood plasma for civilian use but in some instances first-aid stations were equipped to give



SURGICAL INSTRUMENT SET
Type of portable surgical instrument set furnished by the Hyogo Prefecture for use in first-aid stations.

(b) *Equipment of First-Aid Stations.* The equipment in the first-aid stations was either furnished by the prefectural health sections, cost being defrayed by the national and local governments, or by the physicians in whose offices the first-aid stations were located. There was a wide range of variation in equipment in different localities. Where doctor's offices or hospitals were utilized as first-aid stations the existing equipment and supplies were presumed to be reasonably adequate for casualties in moderate numbers, but supplies were soon depleted and had to be replenished, if possible, when casualties became excessive. At improvised first-aid stations in schools and other similar locations a high degree of uniformity as to equipment and supplies was lacking. This was more or less to be expected since the furnishing of these items was a responsibility of each prefecture or municipality. The list of medical equipment actually

blood transfusions. Surgical instruments and injection sets (Photos, Pages 77 and 78) were sterilized by pan boiling, by using wood-heated sterilizers, or were sterilized within the hospitals and brought to the first-aid stations. First-aid stations were equipped with a portable water tank in case the water main to the building was destroyed, but there was usually no separate and independent lighting unit. Beds, in the American sense of the term, were not provided in the improvised first-aid stations but tatami mats were used to some extent. In general the equipment of the first-aid stations throughout Japan was meager.

(d) *Types of Construction.* First-aid stations, as such, were not specially constructed by the national or local governments. In a few instances the Red Cross did build and operate specially constructed first-aid station (Photo Page 79). Basements of public school buildings, doctors' offices,

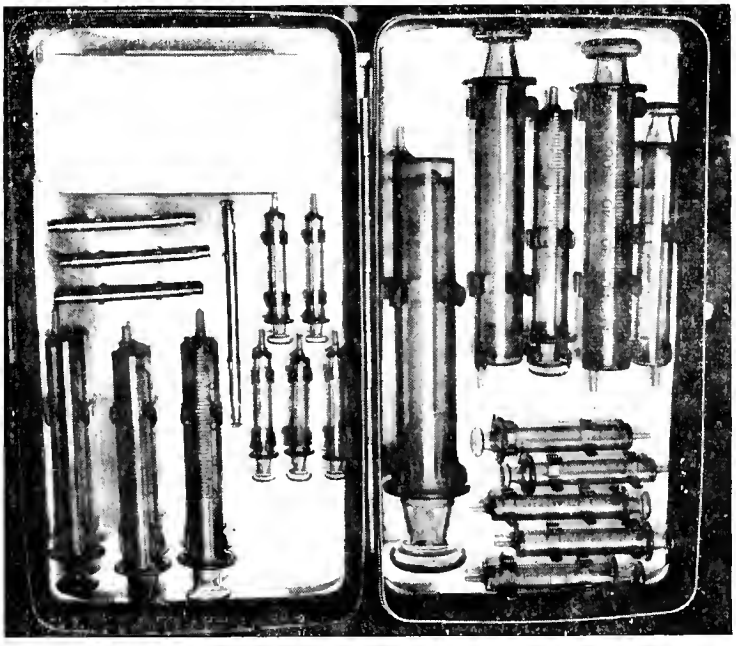
railroad terminals, department stores and sometimes churches and shrines were utilized for first-aid stations. It was customary for each large factory to own and operate an independent first-aid station or small hospitals for use of its employees and families.

d. *Reserve First-Aid Stations.* Reserve first-aid stations (Yobi Kyugo Sho) were created to take care of air-raid casualties in case the established first-aid stations should be destroyed or otherwise damaged. The reserve stations were located throughout the cities and outlying districts and were staffed by personnel from first-aid stations far removed from the site of damage or from first-aid stations where there were only few casualties. In some instances, also, personnel were assigned on a reserve status by the chiefs of the local health sections and in others the Red Cross held workers in readiness for this purpose. The reserve stations were opened on orders from the health section chief, and necessary equipment needed was brought to the station at that time. As in established first-aid stations, no beds were available at the reserve stations. Patients were given emergency treatment and sent either to their homes or to the first-aid hospitals.

e. *Maternity First-Aid Stations (Josan Kyugo Sho)* were established in infant and maternity clinics throughout Japan and staffed by nurses and midwives during air-raid alerts. A special duty of the personnel assigned to these stations was to assist women in childbirth who had been rendered homeless as a result of air raids.

5. *Hospital Services.* a. *Types of Hospitals.* In the air-defense medical setup of Japan, hospitals to be used for the treatment of air-raid casualties were designated as first-aid hospitals and special first-aid hospitals. Casualties were evacuated from the first-aid station directly to first-aid hospitals, and those patients requiring specialized surgical treatment or those requiring a long hospitalization were evacuated further to special first-aid hospitals (Tokubetsu Kyugo Byoin). Each hospital had its own staff of physicians, dentists and nurses but, if, after large air raids, an overcrowding of patients existed, additional personnel was assigned to the hospitals by the local health section chiefs. Any doctor's office or establishment that maintained 10 beds or more for the treatment of patients was classified as a hospital.

b. *Type of Construction.* The installations that were classified as first-aid hospitals and special first-aid hospitals were usually of concrete or



INJECTION SET
Type of portable injection set issued to first-aid stations by Hyogo Prefecture.

brick-veneer construction. In the cities surveyed, only a very small percentage of the buildings were of fire-resistant construction.

c. *Equipment and Maintenance of Hospitals.* The equipment of hospitals was meager. Surgical, X-ray and laboratory equipment was ordinarily in usable condition, but there had been no new replacements for approximately 10 years. The shortage of all types of drugs and specialized equipment such as X-ray film and developing materials constituted one of the most serious problems. Of even more importance than equipment was the matter of maintenance, as this afforded a good index to the medical, surgical, and nursing techniques which determined in a large way the patients' chances for successful recovery. Although not all hospitals in the target areas were visited, the inspection included the best, as well as some of the worst, so that the samples represented a fair cross section of the hospital system in Japan. None of those visited could even approach a Class A hospital determined by American standards, and some were so filthy as to beggar description. None was even reasonably clean, and grime and squalor were the outstanding characteristics of all. In one of the prefectural hospitals an appendectomy was in progress at the time of the visit. The patient was writhing under an inadequate local anesthesia; the operating table was draped with a brown tarpaulin encrusted with blood from previous operations, and on this the instruments rested; the gowns of the doctors and nurses were of a similar brown material showing signs of previous use without washing; no gloves were worn; and the surgical dressings were of reclaimed material which had the appearance of having been used repeatedly before. The use of reclaimed dressings was, in fact, the custom observed in all of the hospitals, due, no doubt, to the shortage of cotton. The dressings were characteristically of a dirt stained hue and, in the presence of crude sterilizing facilities, sterility was hardly possible. The one item of technique most meticulously employed was the wearing of face masks. This seemed to be somewhat of a fetish with the Japanese, as the wearing of face masks by the lay public is a customary sight on the city streets.

RED CROSS FIRST-AID STATION
There were six of the above type stations constructed by the Japanese Red Cross Society throughout Osaka Prefecture.

The general unkempt condition of the hospitals was enhanced by the fact that the preparation of food for patients and the laundering of their clothing was done by members of the family in the ward or patient's room over a smoky charcoal brazier, and generally also this afforded the only source of room heat. Operating rooms seemed to be the customary place for drying operating gowns and other surgical linen. Soap and other detergent materials were conspicuously absent, which accounted to some extent for the microscopic dirt. Under these circumstances the standards of medical and nursing practice could be nothing but deplorable.

d. *Air-Raid Protection in Hospitals.* During air-raid alerts ambulatory patients went directly to preassigned locations, either into the basement of the building or into dugout shelters on the premises outside the building (Photo, Page 80). Bed patients were carried on stretchers to the shelters, or to the center of the lower floors of the building. Anticipating incendiary air raids, many of the larger hospitals, as a fire prevention measure, razed all wooden buildings which were used as hospital wards, and patients were removed to concrete or brick-veneer buildings. In most instances these buildings were shabbily constructed and were themselves a great fire hazard. Blackouts were enforced during air-raid alarms,

Entrance to Underground Shelter—Red Cross Hospital, Osaka, Japan
This shelter was of reinforced concrete—had a capacity of approximately 100 persons. It was used almost entirely by officials and the staff of the hospital.

and strategic points in the hospitals, such as operating and X-ray rooms, were equipped with special blackout curtains.

6. *Medical Training.* Beginning in 1943 each prefecture annually sent a delegation of physicians to Tokyo for a refresher course in air-raid preparedness and in treatment of air-raid casualties. This course, sponsored by the Greater Japan Air-Defense Association (Dai Nippon Boku Kyokai) was didactic in nature, lasted for 5 days and consisted of lectures on shocks, hemorrhage, burns, war wounds, poisonous gases, fractures and practical demonstrations in artificial respiration, bandaging, splinting and transporting patients on litters and improvised litters. Upon return to their respective prefectures the physicians gave a course of instruction to all members of the several professional organizations. Training in medical procedures and first-aid treatment

reached the people through two main channels: first, through the block associations and, second, through the auxiliary police and fire units. Physicians who had received instructions from those who took the course in Tokyo were assigned to teach the leaders of the block associations and of the auxiliary police and fire units who in turn taught the neighborhood group leaders. The neighborhood group leaders gave a practical course in first aid to all persons under their jurisdiction. Some elementary first aid was taught to the people by the Red Cross but, because of the acute shortage of paper, printed first-aid instructions were not freely distributed to the public ("Red Cross" section). The Greater Japan Air-Defense Association, however, prepared for general distribution a simple manual on various types of air defense, including first aid. The press played an important part in the dissemination of medical information to the public, and the leading newspapers would run special columns on first-aid treatment, classification and identification of poisonous gases, their effect, and treatment. These columns were either written by members of the health section or by doctors in consultation therewith. Through the radio, speeches on medical subjects were made, not as a regular course of instruction but primarily to stimulate the people constantly to be prepared to meet medical emergencies. Special instructions on first-aid treatment were given by industrial surgeons to employees of factories.

7. *Medical Supplies.* All medical supplies issued for civilian use were allocated to the prefectures on a pro-rata basis. An acute shortage of medical supplies was experienced by the medical profession during the war years. The situation assumed alarming proportions toward the end of 1943, and the Japanese government took cognizance of the impending critical shortage by setting up an advisory committee for the purpose of standardizing the many types of medicines appearing on the market. Many of the medicines were sufficiently similar to be utilized for the same specific purpose. No real progress along these lines was made and the shortage continued to grow more acute. To aggravate the situation, the civilian population flocked to the drug stores, purchasing the few supplies available, which soon depleted the stocks. The following items were extremely scarce: bandages, alcohol, plasters, oils, antiseptics and anesthetics. Biological supplies of all kinds were almost wholly lacking.

8. *Operations.* a. *Minor Raids.* In appraising the operations of the Japanese first-aid and hospital facilities, cognizance must be taken of the air-raid expectancy as determined by the military and propaganda authorities. The people were consistently led to believe that few if any bombing planes would get through the anti-aircraft defenses. It was reasonable, therefore, for them to plan for only minor air-raid damages. Certainly they had no forewarning to warrant preparations against raids of such proportions as ultimately descended upon them. For such raids as they anticipated the first-aid and hospital facilities were mediocre.

b. *Major Raids.* The major air-raid catastrophes, however, introduced many unforeseen factors. When casualties reached the first-aid stations, the policy was to hold them there not more than 1 hour. It is doubtful as to how closely this schedule was followed, first, because the presence of casualties in large numbers made it practically impossible for the first-aid workers to classify and treat all patients within that time; and second, because at such times transportation facilities were not likely to have been sufficient to evacuate all patients to hospitals promptly. Also, due to heat and suffocating gases many patients could not be reached without a delay of hours or even days. Undoubtedly, many died for lack of first-aid care under those circumstances. Progress in transporting casualties to first-aid stations was further seriously handicapped by the debris clogging the streets and highways. Moreover, the raids did not spare the first-aid stations and first-aid personnel. In Tokyo and vicinity, for instance, 449 out of 857 first-aid stations were destroyed in the great raid of 9 and 10 March 1945; 132 out of 275 first-aid hospitals were destroyed as were 97 out of 196 first-aid maternity hospitals. At the moment of most urgent need, therefore, the operations of first-aid facilities were severely crippled. This same situation was encountered in other cities which suffered widespread devastating raids. In addition to the depletion of first-aid facilities, the sudden and enormous surge of injured persons completely overwhelmed the remaining first-aid forces. These circumstances may be vizualized by the fact that in the raid of 10 March 1945 over Tokyo 5,021 persons were seriously injured and 97,033 slightly injured; and at Nagasaki the most conservative estimate of the injured was 45,000.

9. *Comments.* First-aid preparations and equipment of the Japanese were designed only for small-scale operations and in no instance could they be considered wholly adequate. Under the pressure of heavy casualties their effectiveness approached the vanishing point. How many persons perished for lack of medical and nursing care is, of course, a matter of speculation, but under the circumstances visited upon them, it was inevitable that the number should be considerable. Morale among the medical and nursing personnel was seriously shaken, as evidenced by the fact that whereas the normal number of doctors in Tokyo was 8,905, the census as of 1 September 1945 showed only 2,176; and the number of nurses dropped from 26,200 to 3,600. Obviously, there was a mass migration to points of safety, and a consequent desertion of professional duty. Although the city of Kyoto was not seriously bombed, the preparations there for first aid suffered a drastic decline after observation of what the Kyoto authorities considered the comparatively futile efforts of first-aid services in Osaka and Kobe following the heavy raids upon those cities.

Red Cross

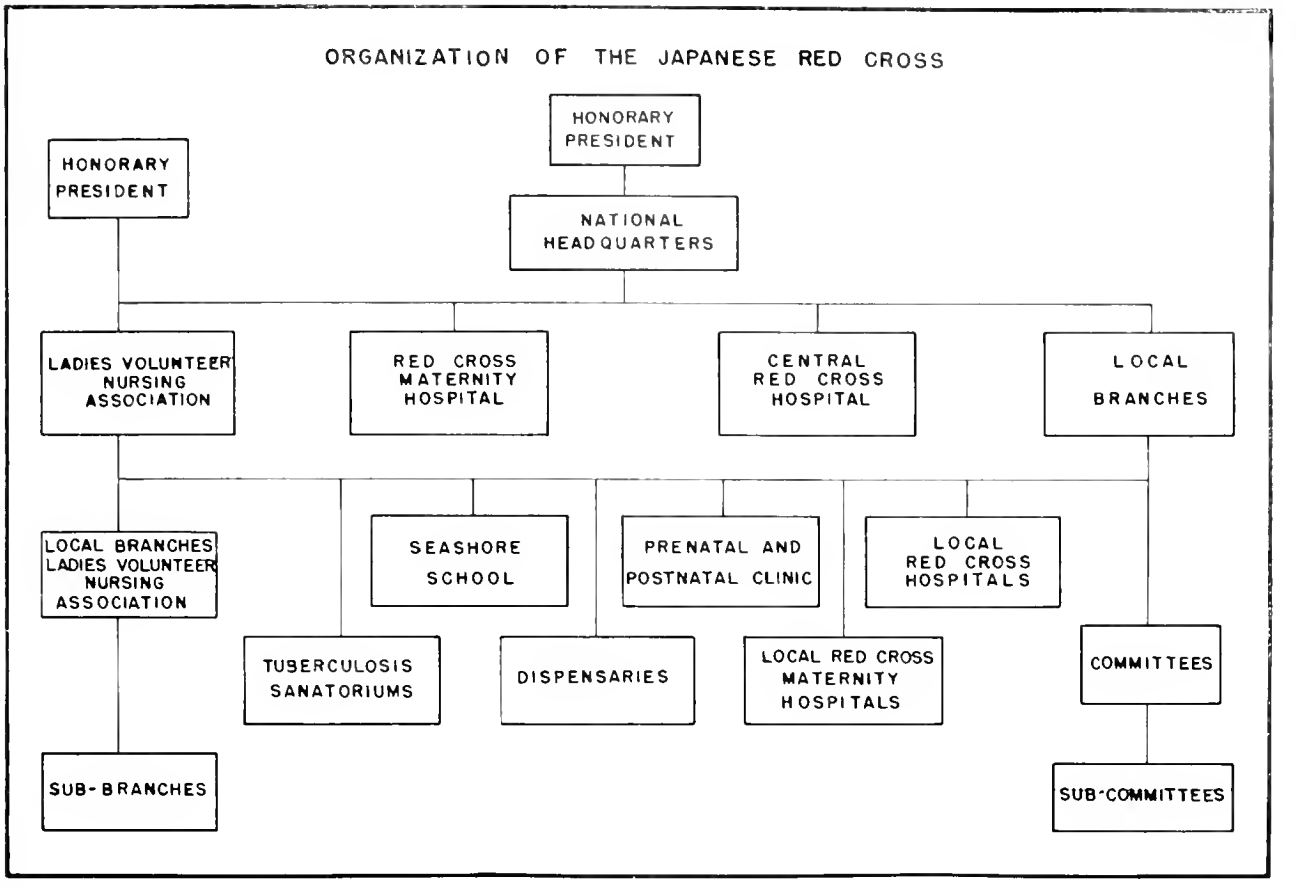
10. *Introduction.* The Japanese Red Cross Society (Sekijuji Sha) originated as a volunteer relief service under the name of Hakuaèsha and administered to the sick and wounded during the Kagoshima Civil War in 1877. In 1877 the Japanese Red Cross Society became a member of the International Red Cross Union in Geneva, and in 1919 it was officially affiliated with the League of Red Cross Societies, which status it still holds. The Japanese Red Cross Society, therefore, was born on the battlefield. In times of war the Japanese military authorities leaned very heavily upon it for personnel trained in the emergency care of the wounded—so much so in fact that only nurses with Red Cross basic training or refresher training in Red Cross hospitals were accepted in the army. In like manner, doctors with Red Cross training were preferred.

11. *Organization.* a. *Central.* From the very beginning, the Japanese Red Cross Society had been the object of special attention from the imperial family. The honorary president was always a prince of the royal household and the active president and two vice presidents were appointed directly by the Emperor. The general affairs of the society were administered by 10 directors among whom were included the president and vice-presidents, while a standing council of 30 members made decisions on all of the more important policies of the society. The Red Cross was related to the governmental machinery in two different ways, which illustrated its dual functions of both military and civilian service: in times of war the Red Cross was under the jurisdiction of the War Ministry; in peacetime it was under the Ministry of Welfare. All administrative heads, both national and local, together with their administrative staff, were paid workers. Local committees, however, operated on a voluntary basis. The over-all organization of the national headquarters was as follows:

- Department of General Affairs:
  - General Affairs Section
  - Local Affairs Section
  - Housing and Development Section
- Department of Foreign Affairs:
  - Foreign Affairs Section
  - Research Section
  - Junior Red Cross Section
- Department of Relief:
  - Nurses' Training Section
  - Public Welfare Section
  - Relief Section
  - Relief Materials Section
- Department of Finance:
  - Auditing Section
  - Supplies Section
  - Construction and Renovating Section
  - Accounts Section

b. *Local.* In each prefecture there was a branch of the Red Cross having jurisdiction over all political subdivisions. This branch was further subdivided into local committees and subcommittees for villages, towns, municipalities, or wards. The prefectural governor, by reason of his office, was automatically chairman of the local branch. The director of the prefectural branch was nominated by the prefectural governor and was appointed by the president of the national society. The local committee and subcommittee chairman and members were appointed by the prefectural director. (Organization Chart, Page 83.)

12. *Administration.* General policies were formulated by the national headquarters and transmitted to the prefectural branches for execution. The prefectural branches, however, possessed a fair degree of autonomy in the development of local programs. For illustration, they could ini-



tiate fund-raising campaigns for the accomplishment of local objectives such as the building of hospitals and clinics, subject only to approval from the national headquarters. Although the veto power was seldom exercised, it was an effective deterrent to local enterprise in some instances, as in Tokyo where the local branch was restrained from building a hospital that would compete with the hospital owned and operated in Tokyo by the national headquarters. All supplies were distributed from the national headquarters upon requisition from the branch office. There again the approval of national headquarters was a prerequisite to the fulfillment of the order.

13. *Functions of the Red Cross, a. National.*

Although the national headquarters of the Red Cross was primarily a policy-making and coordinating body, it did, nevertheless, engage in local activities as, for instance, the operation of hospitals. As shown in the over-all outline of the national headquarters there was a department of relief which in peacetime furnished not only medical and nursing aid, but also material aid in the form of food, clothing and shelter. It is surprising, therefore, that in the great bombing disasters practically no assistance of the latter type was afforded at any time by the Red Cross either at the national or local level. During the war, however, medical and nursing services were considered more important. Little reference was made to the Junior Red Cross in the surveys of target areas, but this was an organization of no mean importance, for which the national headquarters carried the major responsibility. Throughout Japan there were 10,000 Junior Red Cross units in the schools with an average enrollment of 400, or a total of 4,000,000 members. Their principal wartime function was to assist in home-front relief by such means as lay within their power. A report of the Junior Red Cross for 1931–37 stated that "the object of the Junior Red Cross Organization is to impress on the minds of little boys and girls the spirit of universal love and the fundamentals of hygiene; to practice health habits and foster love for children of all parts of the world * * * to foster good habits, morally and hygienically, and to cultivate humanitarian ideals." Perhaps its most important war service was in the form of labor groups to work on the farms in the interest of increased

food production. This practice was seen in post-war operation between Osaka and Kyoto. Included in the function of the national headquarters as a central supply organization was the preparation and distribution of printed material for publicity and teaching purposes. In the field of nurse training the national headquarters underwrote the job of recruiting nursing students and financing their training whenever local deficiencies existed. And finally, the national headquarters maintained 30 relief committees for prisoners of war. These handled more than 410,000 letters and packages for prisoners, both Allied and Japanese.

b. *Local.* The principal Red Cross services were carried out through the local branches. Foremost among these services were the operation of hospitals and clinics and the training of nurses.

(1) *Hospitals, Clinics and First-Aid Stations.* There was a total of 38 Red Cross hospitals in Japan with a bed capacity of 7,600. Included in this list were those operated by the national headquarters to which reference has already been made. These were the general hospital in Tokyo with 500 beds; a tuberculosis hospital in Hiroshima, capacity unstated; a general hospital of 600 beds at Suwa in Nagano prefecture, and two small hospitals of 50 beds each in the same prefecture. The latter two were reserved exclusively for the navy. With that exception, at least 10 percent of all beds was reserved for civilian use, but the military forces had first claim on all other beds. The Red Cross hospitals were staffed entirely by Red Cross personnel. The military forces made no contribution toward the maintenance of the hospitals, but paid the same per diem rates as were charged for civilian patients. As an accessory to the hospitals, the Red Cross conducted local clinics, and in some instances, as in Nagasaki, these were the only Red Cross medical installations in the prefecture. In the localities of the more severe air raids when the governmental first-aid facilities were overtaxed, the Red Cross in some instances set up supplemental first-aid stations. For example, six such stations were established in Osaka (Page 79).

(2) Training of nurses in peacetime as well as in war was an outstanding service performed by the Red Cross. Nurses trained in Red Cross hospitals occupied a position of undisputed supremacy in the nursing profession. It was presumably for that reason that the army would accept only nurses having some degree of Red Cross training. Those who had had the full course of training in Red Cross hospitals were preferred, but others who had been trained in other hospitals were eligible for army service after a 3-months refresher course in a Red Cross hospital. It is obvious, therefore, that the nurse training facilities of the Red Cross were strained to the limit to meet the demands of the military forces. The standard course for nurses required a 3-year period of training, and admitted only those who had been graduated from high schools. The military demand for nurses, however, made it necessary to admit students with substandard preliminary training and to shorten the course of instruction. As a war measure, therefore, students were accepted upon graduation from grade school, and the course for this group was reduced to 2 years. The latter were known as *B* class nurses, whereas those meeting the standard requirements and pursuing the 3-year course were *A* class nurses. During the war years there were 1,900 *A* class nurses and about 1,000 *B* class nurses trained annually, but after the cessation of hostilities the training of *B* class nurses was discontinued. Upon graduation there was no distinction made between *A* and *B* class nurses in so far as duties or pay was concerned. It was natural, however, that the *A* class nurses should be sought for the more responsible positions. The training program also extended to a special group of nurses who had received basic training in other than Red Cross hospitals. These were brought in for a 3-months course in order to be conditioned for military service. The total number processed in this way was not obtainable. All of the expenses incident to training—for food, quarters, clothing and books—were borne by the Red Cross. After graduation both *A* and *B* class nurses were obligated to service with the Red Cross for a period of 12 years which, in substance, meant that they were in the Red Cross reserve for that period. A unique item in the tour of duty of nurses on the fighting fronts was the fact that they served only 1 year at a time, after which they were brought back home and replaced by others. After a year at home, however, they were subject to reassignment with troops in the field.

(3) Each of the Red Cross general hospitals had an obstetrical department, and in Tokyo there was a special maternity hospital. These facilities were utilized in the training of midwives who received a 2-year course of instruction.

This is a highly important function since vastly more babies were attended at birth by midwives than by doctors. Graduates were bound for 2 years to work in an institution designated by the Red Cross, and for a period of 6 years thereafter they were required to be in readiness to respond to calls from either the national headquarters or a local Red Cross branch.

(4) *Training of the Public.* As far back as 1927 a plan was instituted for training the public in hygiene through the facilities of the local branches. With the advent of war the emphasis was shifted from hygiene to the care of the wounded. The Red Cross, therefore, supplemented the first-aid training program carried on by the governmental units. The pattern varied in different localities, but the general plan was to send out teams, each consisting of one doctor and two or more helpers who had had army experience, to conduct lectures and demonstrations before regional 2-day meetings arranged in advance. Stress was placed upon the attendance of the leaders of neighborhood groups and of block associations at these meetings, as they were expected to teach in turn first-aid methods to their constituent groups. Similar courses were given to school girls and to womens' organizations, but the course was not standardized and no certificates of proficiency were given. In some instances, however, a series of lectures and demonstrations covering a period of two or three weeks was given to selected groups of girls in schools, upon completion of which certificates were given.

(5) *Public Health and Welfare Work.* As has already been noted, welfare work was practically abandoned during the war and this function was shifted to the governmental agencies. Public health activities also continued but on a reduced scale. Although Japan had a health section in each prefectural government, the most significant public health work was done by the Red Cross. Since 1914, the Red Cross had carried on an active campaign against tuberculosis, including the establishment of clinics, preventoria, sanitoria, and the dissemination of educational and propaganda material. One of the interesting and successful projects in that connection had been the seaside summer schools for "delicate" children. This venture was so well received that a report for 1934 shows 39 such schools in which 4,552 children were cared for. Another highly important project of the Red Cross had been the infant and maternal hygiene and consultation centers. These activities were firmly established in some of the larger centers of population and were rapidly spreading to others. While these public health measures were carried on supplementary to, and in conjunction with, the governmental health agencies, they represented practically the only service of this nature in Japan.

14. *Finances.* The Red Cross in Japan had from its beginning enjoyed the generous patronage of the imperial family. Each year a large, but undisclosed, grant was made from that source for the support of the Red Cross program. The two principal sources of funds for operation and maintenance, however, were membership fees, and fees for service in the hospitals and clinics.

a. Membership was so unique as to require special explanation. All memberships were for life with the exception of the regular membership which was granted upon payment of 3 yen per year, but even that became a paid-up life membership after 10 years of consecutive payments. The regular life membership might be secured by the payment of 25 yen in a lump sum. Those who paid 200 yen or more at any one time or who were recognized as having rendered especially meritorious service to the society were awarded special membership. Regular or special members who subscribed for a further period of 10 years at 3 yen per year or another 25 yen in a single payment received a "Voluntary Medal" from the society. By making second and third payments as just described, the contributors receive the "Second" and "First Class" medals, respectively. Those who contributed 1,000 yen or more in a single payment were made special members, and, in addition, received a citation "Yukosho" or "Order of Merit" with the sanction of the emperor. Those who subscribed over 10,000 yen in a single payment were given one of the regular imperial decorations called "Konjuhosho" or "Blue Ribbon Distinguished Service Medal", in addition to the "Order of Merit" above mentioned. Honorary members were made only upon a resolution passed by the standing committee, without reference to contributions. From all membership fees and contributions received by local branches 10 percent was turned over to the national headquarters.

b. Fees for professional and hospital services constituted the principal, if not the sole, revenue for the maintenance of the hospitals and clinics. All patients with any financial status were re-

quired to pay the full charge or as much of it as they were able. Those who could not pay were treated free. It is alleged that no distinction was made between charity and paying cases in so far as treatment was concerned.

c. Special drives for Red Cross funds played a minor role in the financial plan, as the war program of the Japanese Red Cross underwent no expansion comparable with that of the United States. Such special drives as were staged were intended primarily to raise funds for local hospital construction and, consequently, were confined to local prefectures.

15. *Comments.* Although the Japanese Red Cross was a quasi-military service, its program reflected less emergency activity than that of any other organizations engaged in the care of human casualties of war. In other words the Red Cross of Japan did not go "all out" for war work to a degree comparable with the American Red Cross. Welfare work for disaster sufferers was left wholly to the governmental agencies, and there was no evidence discovered of work for the comfort of soldiers or assistance to soldiers' families. A policy of this kind was in keeping with the depressed standards of living and comfort both among the civilian population and military personnel. The army, however, was wholly dependent upon the Red Cross for its supply of nurses.

Mortuary Services

16. *Introduction.* The only evidence of long-range planning for large scale emergencies in the disposal of the dead from enemy action in Japan was found in Tokyo where it was said that in 1940 inquiry had been made from army officials regarding the expectancy of deaths from war. As has been noted in the introduction to this section, an estimate of 30,000 annually was received. The mortuary service was therefore planned with that figure in mind. Elsewhere, however, plans had to be developed as the emergencies arose, since the impression had been created generally that the islands would not be invaded and that bombing damage would be negligible. Directives sent out from Tokyo to the prefectures stressed the importance of utmost secrecy in connection with deaths from air raids. Bodies were to be disposed of in secluded places and funerals were to be carefully screened from the public gaze. The obvious intent, as well as the expressed purpose, of this policy was to avoid exciting the public. This circumstance naturally deterred any public cognizance of the need for a comprehensive program for disposal of large numbers of war dead, even though such casualties had been anticipated.

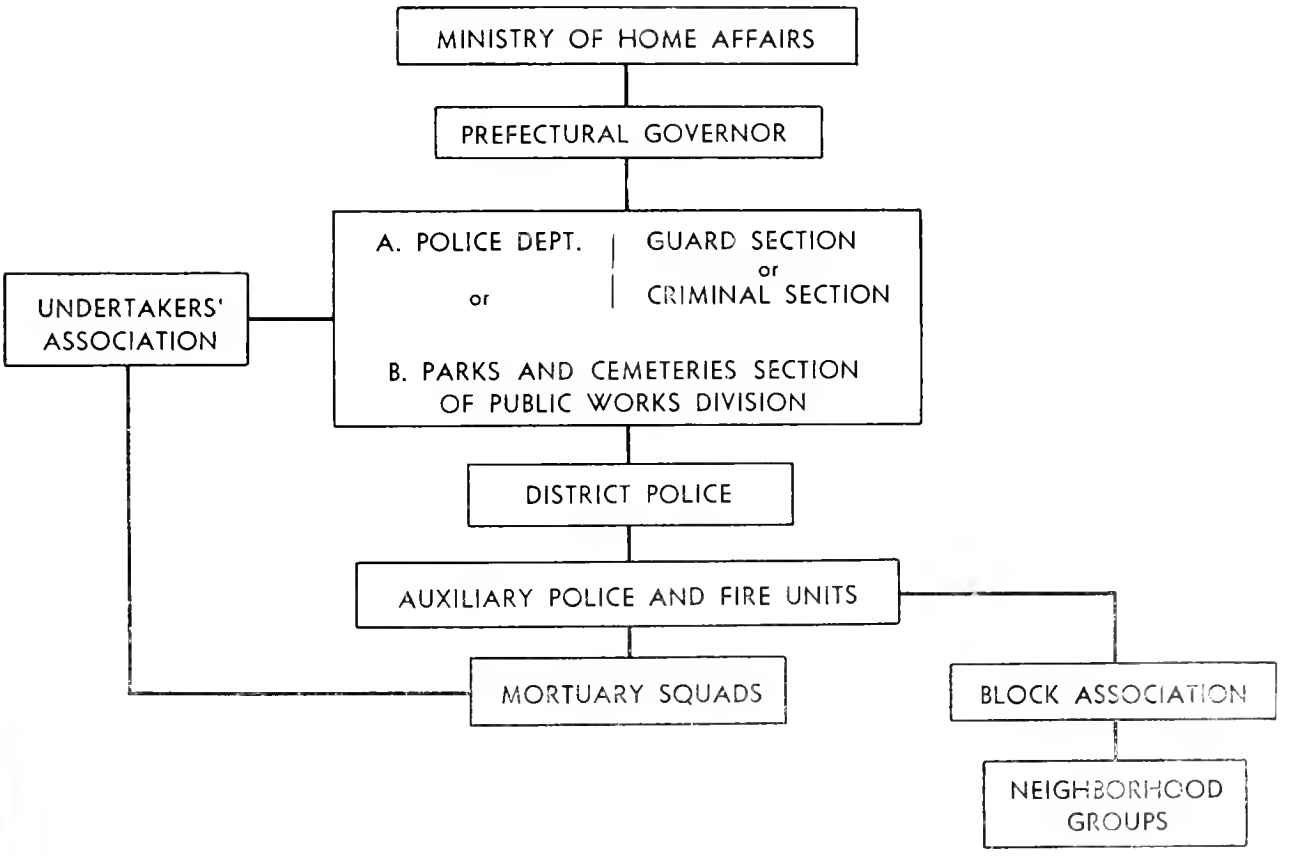
17. *Organization.* At the ministerial level there was no clearly defined central authority giving guidance and direction to this work. At the local level it was usually a function of the prefectural police department in some manner, and the police departments were under the overall jurisdiction of the Ministry of Home Affairs. There was a great deal of confusion and uncertaintly as to precisely where the responsibility for the work should be placed. It was apparently a job which no one wanted. In Osaka it was handled by the guard section of the prefectural police department, and in Kobe and Nagasaki by the criminal section; in Kyoto it was first a function of the health department, later transferred to a section of the police department having command and control jurisdiction over air-defense activities and known as "Keibuka," and finally transferred to another section known as "Keimuka," which had charge of personnel and accounts; in Tokyo the setup differed from all the others in the fact that the work was under the parks and cemeteries section, formerly a branch of the health department, which had been transferred to the bureau of planning and public works operating under the governor of the Tokyo Metropolitan District rather than the chief of the district police. In all instances the undertaker's association was involved either as the operating agency or in an auxiliary capacity. But, regardless of the variations in the prefectural pattern, the ultimate units of organization which actually did the work were the mortuary squads of 8 to 10 men each, which were branches of the auxiliary police and fire units. These, as a rule, were made up of undertakers and their helpers, augmented wherever possible by men who had had experience with the handling of dead bodies on the battlefield. In some instances men had to be forcibly drafted into this service, as it was not only distasteful to the average person, but violated the religious concepts of the Japanese. In one instance only, namely in Tokyo during the great fire raids of 9 and 10 March 1945, did the army give any assistance. From the foregoing outline it is interesting to note how this work, as did most of the emergency program, finally gravitated to the police authorities. That was a logical development, not only because emergency

work required the exercise of the powers of command, but also for the reason that identification was an important function of the police in which they were better trained to act than any other agency. (Organization Chart, Page 87).

18. *Administration.* When it was once decided where this service should fit into the prefectural government, the administrative procedure became fairly simple. Mortuary squads were formed and assigned to their respective auxiliary police and fire units. They then worked under the direction of the district police offices, but under the tactical supervision of the chief of the service in the prefectural office and under the technical supervision of the undertaker's association. Military personnel assigned to this work were under the direction of civil authorities. Details as to the duties of mortuary squads and how they were performed will be discussed under the paragraph on operations.

19. *Operations.* a. *Mortuary Squads.* After many of the minor air raids when casualties were few, the task of disposing of the dead was carried out by undertakers in the usual manner without calling on the emergency machinery. Even at the sound of an air-raid alarm the mortuary squads did nothing more than hold themselves in readiness for action. Little was attempted until after the cessation of an air raid. According to a prearranged schedule, a specified representative of the undertaker's association reported to the headquarters of the auxiliary police and fire unit

ORGANIZATION—MORTUARY SERVICE OF JAPAN



when an air-raid alarm was sounded in order to determine the need, if any, for assistance. Should this need develop, the call was sent out through the chief of the auxiliary police and fire unit for mortuary personnel to report for duty in such numbers and places as the emergency might require. In some instances the menial duties associated with the job were performed by members of the neighborhood group association, civil prisoners, or even soldiers. During the rescue and first-aid operations, however, the mortuary squads worked in close harmony with rescue and first-aid workers, as often a narrow margin separated the living from the dead. When raids were followed by fire, as most of them were, it was commonly a matter of several days before dead bodies could be reached by the mortuary squads. Following the raid of 10 March 1945 on Tokyo, bodies were still being found in isolated places after 25 days.

b. *Identification and Notification.* Each person was required to have sewed into articles of his or her clothing a cloth identification tag giving the name, address, neighborhood group to which the individual belonged, and, in the case of school children, the school attended. These, of course, were useless in those instances where the clothing was destroyed by fire. Fingerprinting was not used because of the stigma attached to it in connection with its use in the identification of criminals. Responsibility for identification was placed upon the police department because the police were best trained and equipped for personal identification. Also, the local police officials by reason of frequent inspections of residences in their jurisdictions had a personal acquaintance with practically everyone in the community. It was doubtless for those reasons that in two of the target areas the criminal section of the police department had charge of the disposal of the dead. When casualties occurred, an effort was first made to identify them on the spot, as the location of the person was an important factor in identification. When bodies were identified, relatives were promptly notified, if possible, and given an opportunity to claim the body for private funeral. If it were impracticable or impossible to identify bodies at the site of death, further efforts were made at the locations where dead bodies were concentrated. It was here that the families and friends of the dead were asked to assist in the identification. Body marks known to friends and relatives, and even the pattern of cloth, if any articles of clothing remained, were important aids to identification. It should be noted that accurate identification was not only of a sentimental and statistical value, but played a decisive role in establishing claims to various types of indemnity benefits.

c. *Transporation of the Dead.* When deaths occurred within the bombed area the bodies were picked up by litter bearers and carried either to points of concentration or to locations on the periphery where the bodies could be reached by motor vehicles. For terminal transportation to crematories or burial grounds, hearses belonging to local undertakers were used in so far as possible, but these were notoriously inadequate except in the case of raids resulting in small numbers of casualties. Ambulances were practically nonexistent, and the few available were used for the transportation of the injured rather than the dead. The principal reliance, therefore, was upon trucks which were supplied upon request from the chief of the mortuary service by a motor pool in the central control headquarters. In the most dire emergencies even the supply of trucks failed, so that horse-drawn vehicles and any other wheeled conveyances were pressed into service.

d. *Collection and Storage of the Dead.* The veil of secrecy enjoined by the early directors was completely swept aside by the grave necessities of war. Instead, when the heavy raids struck, points were designated where bodies should be collected and held for identification by friends and relatives. Thus, the ghastly exhibits were not only placed on public display, but the public was urged to make a critical inspection of them. Laid out in rows in the temple compound or some other open space accessible to the public, the bodies were to be held a maximum of 2 days in warm weather, and 4 days in relatively low temperatures. Wherever available, large floor spaces with overhead protection from the elements were preferred for the temporary storage of bodies, but such facilities were the exception rather than the rule.

e. *Disposal of the Dead.* Whenever bodies could be identified, relatives or friends, if they could be found, were not only given an opportunity but were expected to claim the body for private disposal. All other bodies were disposed of at the expense of the municipality or prefecture. The predominating method of disposal was by cremation. Existing crematory facilities were utilized to the extent of their capacity, but in the

heavy raids they were found hopelessly inadequate, especially in view of the fact that in not a few instances the crematories themselves were either partly or completely destroyed. When the load exceeded the capacity of the crematories, the emergency was met in one of two different ways.

Skeletal remains after open cremation following atomic bomb raid at Nagasaki, Japan.

The prevailing method was to burn the bodies in the open either at a shrine or at a location in the devastated area. In the large areas of devastation as at Nagasaki numerous cremation points were observed. In Tokyo, however, a rather unique plan was adopted, whereby the bodies were given temporary earth burial in single graves, if identified, but otherwise in large pits containing 100 bodies each. The plan was to exhume the remains 5 years later when the flesh had disintegrated, and to cremate the bones. In the case of identified bodies the ashes were to be delivered to the family or friends, but the ashes of unidentified bodies were to be deposited at some appropriate shrine.

20. *Comments.* a. *General.* The disposal of war dead was a duty shunned by all official agencies until mounting casualties forced the issue. For that reason the responsible authorities were lacking in both plans and equipment when calamity descended upon them. The normal facilities for disposal of the dead were sufficient to take care of the situation resulting from minor raids, but even the most energetic emergency measures were totally inadequate under the impact of the cataclysmic raids. Perhaps the best approach to the solution of the problem was the plan devised by the city of Tokyo, as described in the preceding paragraph. Except in deference to religious customs and beliefs, however, there was no necessity of carrying the plan beyond the stage of earth burial.

21. *Extreme Emergencies.* As an illustration of some of the unique problems encountered as a result of massive casualty lists a recapitulation of the experience in Nagasaki after the atomic bomb will be informative. In response to the call immediately sent out to the 250 members of the

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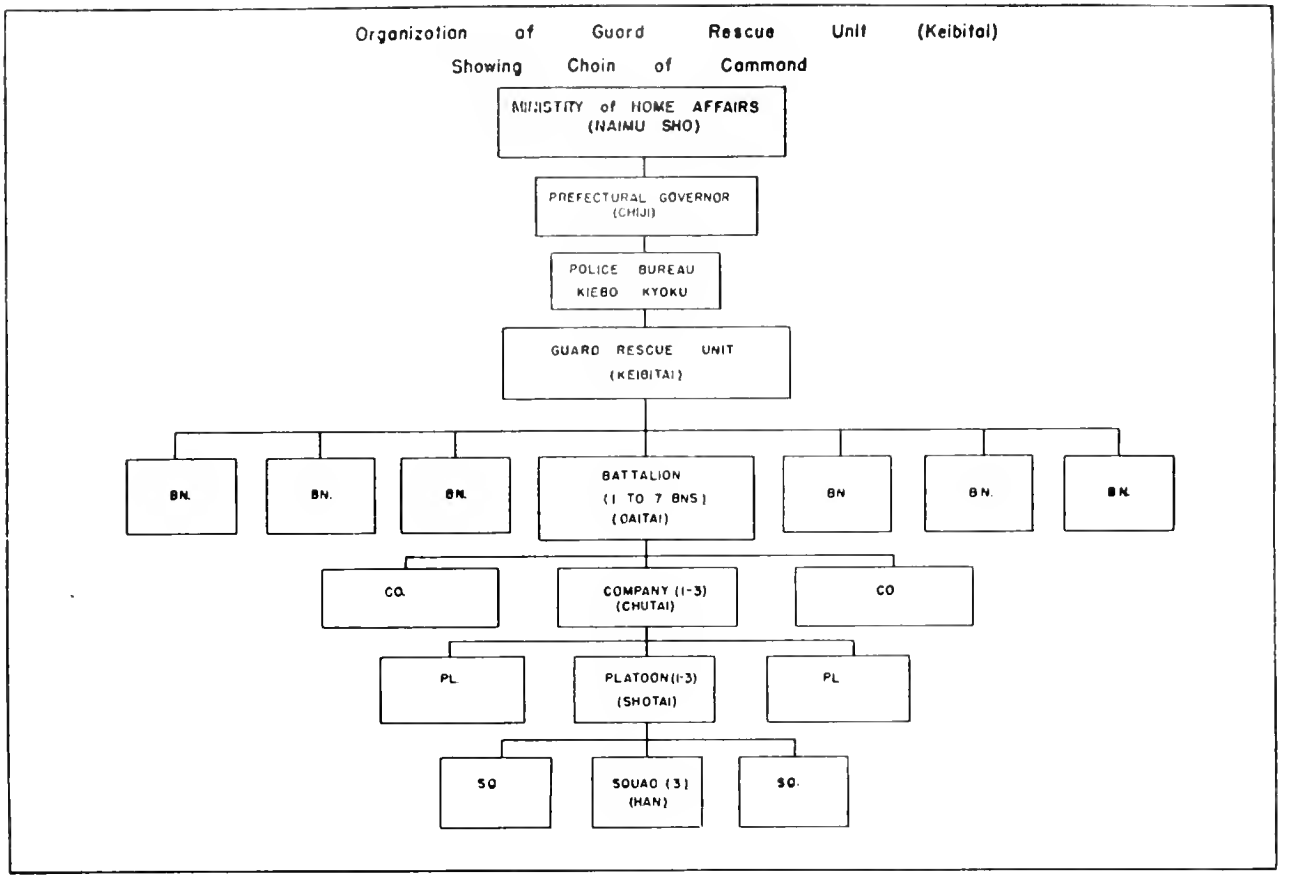
mortuary squads, only 70 reported for duty. Many of them were, of course, either killed or injured; others had urgent problems at home in caring for their own families and friends so that they could not, or at least would not, disregard what they considered their most urgent duty. Of the 25,761 known dead resulting from the immediate effects of the bombs, it was estimated that about 75 percent was killed instantaneously which meant that the mortuary service was suddenly confronted with the task of disposing of a prodigious number of dead bodies. Undoubtedly a large number of bodies was not located, as it was said that the stench of decomposing flesh hung heavily over the area for weeks. The location and identification of the dead were, of course, the first objective, for which purpose a special group was chosen from mortuary squads. At first the heat was so great that they could not enter the stricken area, so that their activities were confined to the river banks and other places where the heat was relatively low. Some sections were inaccessible for a period of 3 days or more. Calls were sent out for all available helpers from neighboring cities and in this way there was assembled a force of about 400 to augment the local workers. The crematories having been found unequal to the task placed upon them, the bodies were collected at convenient points within the ruins and burned in groups of five, using for fuel the combustible material collected from the wreckage (Page 89). The great raid on Tokyo presented problems similar in all essential respects to those described above for Nagasaki.

G. RESCUE SERVICES

1. *Introduction.* The development of the rescue services as part of air-raid-protection organizations was effected before 1932 when Japanese organizations similar to neighborhood groups (Tonari Gumi) and block associations (Chokai) performed fire-fighting and other protective functions in their respective areas. In order to develop more efficient operation and to secure more control over such groups, the prefectural governments, in 1932, issued directives that they would be combined on a prefectural level into the guard and rescue unit (Bogodan). This organization functioned until 1939 when the Ministry of Home Affairs directed that all guard and rescue units be absorbed into a new organization to be known as the auxiliary police and fire unit (Keibodan). This new organization, in addition to the responsibilities of the former guard and rescue unit, was to assume the varied functions of air-raid protection. It was within the labor and guide squads of the guard arm of this organization that the first real rescue service in connection with air raids was established (for a detailed explanation of the organization, refer to the "Auxiliary Police and Fire Unit (Keibodan)" section of this report). As a result of practices and drills, it was soon recognized that the capabilities of the rescue service of this organization were insufficient to handle major rescue incidents from air raids. Therefore on 20 April 1944 the Ministry of Home Affairs issued a directive to the prefectural governments ordering the establishment by 1 May 1944 of the guard rescue unit (Keibitai) as a special organization under the prefectural police bureau. The directive specified the functions of the organization as auxiliary police duties, guard duties, road clearance, panic control and morale building, with special emphasis upon rescue service during air raids.

Guard Rescue Unit (Keibitai)

2. *Organization.* The guard rescue unit (Keibitai) organization functioned as the principal rescue service unit during the entire period of air raids from the fall of 1944 to the end of the war in August 1945. It was generally established as part of the guard service in the peace preservation and maintenance sections of the police bureau in each prefecture. The directive permitted the prefectural governments considerable latitude in the organization of the unit, which resulted in the formation of units of 1 to 7 battalions. The number of battalions depended upon the area to be covered, the financial condition of the prefecture, and the availability of man power. Each battalion was composed of one to three companies; each company had from 1 to 3 platoons; and each platoon was invariably made up of three squads. Each squad was composed of one squad leader and 10 men and since each platoon always had 2 leaders and 3 squads, the complement of a platoon was 35 men. The total complement of each unit varied because of the diversity in the number of companies. (Organization chart on Page 91). In no instance was a unit ever recruited to its full strength because of the heavy military drain upon man power. The chief (Keibitai Cho) of each established unit was the chief of police affairs of the prefecture, and he was



assisted by police inspectors. Police superintendents commanded battalions, and lower ranking police officials were in command of the smaller units.

3. *Personnel.* The personnel of this unit were recruited from two sources: first, from individuals who had applied for appointment to the police force; and second, from regular members of the police force. In the first group, the applicant generally had to be a graduate of a city school, pass a physical examination, be 17 to 40 years of age, and pass a written test. Upon compliance with these regulations, the applicant was given a 50- to 90-day period of training which covered general police duties and rescue service. At the end of this training period the applicant was assigned to either the regular police organization or to the guard rescue unit in accordance with his record and abilities. In the second group, the members were chosen from the regular police force personnel on the basis of good records in the performance of regular police duties, provided they were not over 30 years of age. Every member of each unit was a regular employee of the prefectural government and, as such, received a definite salary and observed definite hours of duty, except during air raids when the entire personnel of a unit was mobilized.

4. *Operational Control and Procedure.* Each city or prefecture which had organized a unit was generally divided into areas in each of which was located a battalion or lower echelon headquarters. These areas usually were composed of a number of police districts. When an air-raid "alert" was sounded all members of units were required to report immediately to their battalion headquarters. When an incident occurred it was reported generally through the police box to either the district police station or the battalion headquarters from where it was relayed to the control center. There the chief of the unit made the decision as to the size of the unit to be dispatched and the battalion chief at the particular battalion headquarters was ordered to dispatch the specified unit or units. In some cases, where battalion commanders were given the authority to dispatch units, the report of the incident would be relayed from the police station directly to the battalion headquarters. Wherever this situation prevailed the chief of the entire unit, stationed

the control center was kept constantly advised regarding the disposition of all units. The movement of battalions or their units from one area to another was under the direct supervision of the chief of the entire unit and was accomplished only when requests for aid were forwarded by battalion commanders. Communication among the control center, battalion headquarters and the senior officer at the incident was maintained at all times either by telephone or messenger. The rescue responsibility of the unit at an incident was terminated just as soon as all trapped victims had been extricated and turned over to the medical services functioning at the incident.

5. *Training.* While the primary function of the unit was rescue during and after air raids, the shortage of man power necessitated its use for other duties, mainly police, in the periods between air raids. This situation greatly influenced the development of the training program. Applicants for a position on the police force were given a 1- to 3-months training course in regular police duties such as the study of city ordinances, operation of police boxes, and patrol of sections of the city. At the conclusion of this training period, men were assigned to either the guard rescue unit or the regular police on the basis of examinations, physical make-up, and age. Very often the younger men were assigned to the guard rescue unit so that they could continue to receive police training in conjunction with the rescue-service training. The leader of each unit was solely responsible for the training of the personnel. He planned the courses of training and issued directives that they be carried out. Schools were established in the prefectural police and fire departments, which were attended by all battalion, company, and platoon leaders who then returned to their respective commands and instructed their personnel. In some instances, the commander in chief acted as the instructor but very often men with some engineering background were brought in to give lectures and demonstrations. The program was further amplified by reports made by leaders of the unit who had visited other cities to study training programs and who also had studied the operation of rescue services in bombed cities. The army had established an engineer corps school (Kohetai Gakko) in several prefectures, and they were made available for training guard rescue unit leaders regarding the types and capabilities of bombs used by the Allied air forces. The only practical training was obtained as a result of the units' helping to demolish houses to form firebreaks. No formalized curriculum was ever developed and whatever periods of training were instituted were always sandwiched between the training in and performance of police duties.

6. *Special Functions.* Although rescue service was the most important of its air-raid-protection duties, the unit was also authorized to aid in road clearance after raids, control of traffic, guidance and direction of refugees, prevention of panic, and bolstering of morale. Particular emphasis was placed upon training the unit in the last two of these duties. This was particualrly true after the fall of the Mariana Islands when it became apparent that heavy air raids on the homeland were imminent. Investigations definitely proved that, during the later stages of the war, the failure to establish good training procedures and to provide sufficient and adequate rescue equipment prevented the unit from performing rescue services and caused it to direct almost all of its efforts to fulfilling these auxiliary duties.

Guard Arm (Keibibu) of the Auxiliary Police and Fire Unit (Keibodan)

7. *Organization.* Rescue service in the auxiliary police and fire unit was concentrated in the guard arm (Keibibu). Some of the auxiliary police and fire units, in order to achieve better control and operation, were divided into subunits (Bundan). (For a detailed description of the auxiliary police and fire unit see that section of this report.) Although the guard arm was usually divided into squads with specific duties, the shortage of man power compelled all members of the guard arm to perform the functions of rescue, first aid, messenger and similar duties. In some localities the medical arm was also assigned the responsibility of rescue service along with the guard arm.

8. *Personnel.* Since all members of the auxiliary police and fire units were recruited on a volunteer basis, the leader of the unit generally selected and assigned the members of the guard arm. Because the number of members varied according to the population of the area and the leadership of the unit, the number of personnel available for rescue service ranged from 200 to 16,000 persons in different communities.

9. *Training.* The training program is described in the section of this report on "Training of

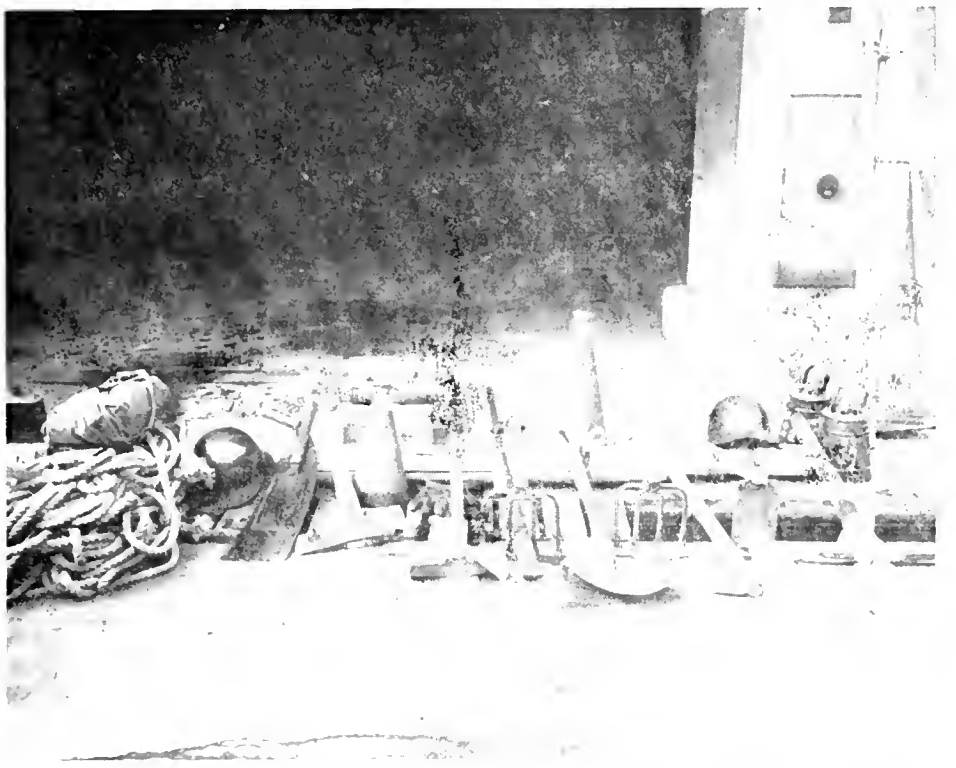
Civilian Defense Personnel and the General Public."

10. *Operational Control and Procedure.* For an explanation of the air-raid operational control and procedure of the guard arm refer to the section of this report covering the auxiliary police and fire unit (Keibodan).

Features Common to Both Organizations

11. *Location of Casualties.* The usual procedure for locating trapped victims was to find the entrances of the shelters and buildings which had collapsed and start the removal of debris at those points. Due to the generally small size and light construction of residential buildings, this had been found to be the most satisfactory method. In some instances, rescue officials attempted to quiet all persons in the immediate vicinity so that the groans and cries of trapped victims might be used to help determine their locations. At no time were mechanical devices employed to locate persons buried under the ruins.

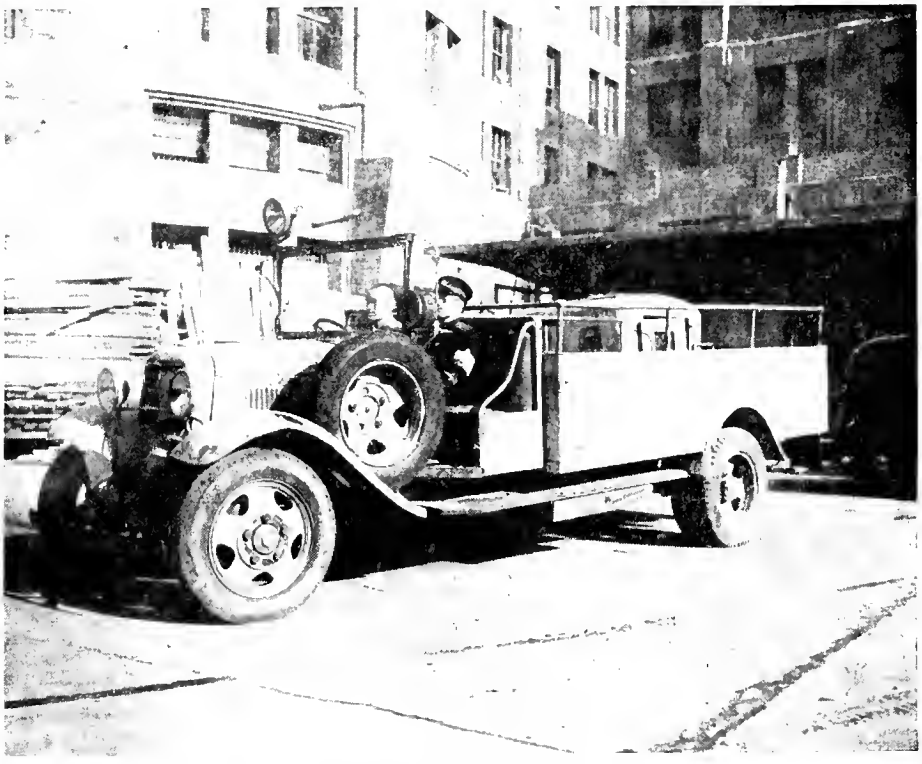
12. *Rescue Technique.* The debris-clearance method was the only one taught and used for extricating trapped victims. If the debris was piled above the surface of the ground, the work of removal was started from the sides but if the building had collapsed into the basement or into the shelters, the removal of debris was started from the top of the pile. The dangers of this method to the casualties were fully realized by the Japanese but nevertheless no other method was developed. Whenever rescue incidents occurred in heavily constructed buildings, fallen beams and other weighty materials were removed by attaching ropes and pulling them from the debris by means of trucks when available, otherwise, by groups of rescue personnel. Tunneling and bracing to prevent further collapse were seldom used. In some areas, plans had been proposed to develop an emergency engineering unit within the guard rescue unit which would have mechanical jack hammers and cranes as part of their equipment. These units were to have been formed by persons engaged in the building trades but due to the lack of facilities and the quick ending of the war, the plans never matured.



Typical equipment of guard rescue units and guard arms for performing rescue operations.

13. *Equipment.* Rescue equipment of the guard rescue unit was of the simplest and crudest type possible, consisting of hand implements such as saws, small picks, rope, sledge hammers, crowbars, shovels and the like (Page 93). No

equipment operated by motive power was available. During the early part of the war a few trucks were available for transportation of personnel and equipment to incidents (Page 94) but, due to destruction by raids and inability to secure parts and maintain proper mechanical condition, it was often necessary for the units to travel to incidents on bicycles or on foot. The guard arm had even less equipment and always moved to incidents on foot.



Type of trucks which were available in very small numbers for transportation of personnel and equipment.

Comments

11. The rescue services assigned to the guard rescue unit and guard arm of the auxiliary police and fire units were among the most poorly organized and inefficient of Japanese civilian defense services. The reasons for this were:

a. The training of the personnel was woefully inefficient as most of the instructors had no experience in trades or work which was closely allied to the problems of the rescue services. In some localities, the instructors secured all of their knowledge on rescue operations from a manual published by the Ministry of Home Affairs entitled "Rescue of Air-Raid Victims" which devoted about one page to actual rescue work and the rest of the pamphlet to the treatment of injuries. The training program seldom included any practical training even when areas bombed out by early raids presented excellent opportunities for such training. Too much time in the training program was devoted to such subjects as prevention of panic and bolstering of morale.

b. The simple and crude equipment, together with the lack of vehicles, prevented the performance of real rescue services. The absence of mechanical equipment, so necessary in rescue service, was probably due to inadequate planning which had been based on estimates by the military authorities that Japan would not undergo heavy raids of high-explosive bombs. No sound detection implements were used to locate persons buried under debris.

c. The personnel of these units was selected on the basis of performance of police duties and physical makeup rather than of ability or experience to perform the type of work required. The number of rescue workers, if maintained at full strength according to the tables of organization, was adequate for small and medium-sized

raids but should have been augmented by mobile reserves outfitted with heavy equipment such as were observed in Germany. The failure to keep the units at full strength was attributed to the demands of the military service since no member was exempt from the draft.

d. The false sense of security caused by the lack of accurate information given out by the military authorities definitely hampered the establishment of efficient rescue services. The military did not expect high-explosive raids in any great number or intensity and so advised that preparations be made to handle high-explosive bombs not exceeding 500 pounds.

H. POST-RAID CLEARANCE AND REPAIR

1. *Introduction.* a. *Scope of Report.* This study covers the manner in which the Japanese prepared and executed plans for clearing streets, repairing roads and bridges and restoring public utility services disrupted by air attacks. The topic includes the repair and demolition of buildings, and salvage.

b. *Peacetime Background.* (1) *Government Operations.* Ultimate jurisdiction over the more important roads and bridges, as well as over certain public utilities in Japan, rested with bureaus within the Ministry of Home Affairs operating through comparable bureaus in the prefectural governments. National control was effected by direct grants for new construction, review of plans for all construction and by requiring the prefectures to submit their public works annual budgets for approval. When war broke out, therefore, the prefectures looked to the national government for guidance.

(2) *Municipal Operations.* The major cities operated under the close supervision of their respective prefectural governments. Less important roads and bridges and side streets were peacetime city responsibilities, but the prefectures were directly responsible for the main arteries. The cities, therefore, turned to the prefectures for leadership. Water works or municipally operated street cars were an exception, however, for the cities, in complete control in peacetime, were prepared to accept full responsibility for their maintenance and restoration in wartime emergencies.

(3) *Private Operations.* Except for government interest in their financial affairs or government regulations affecting individual employees, private companies operating street cars or electricity or gas distribution companies conducted their operations independently of government help or control. When the war emergency arose, particularly that of the air raids, they preferred to handle their problems, using their own resources rather than calling for government aid.

2. *Clearance and Repair of Roads, Bridges and Waterways.* a. *The Problem.* The first serious planning for clearance and repair in December 1943 was based on the assumption that, if and when American bombers attacked, the weapon used would be high-explosive bombs. In the larger cities, certain wide streets were designated as priority ways for emergency clearance and repair so as to allow for movement of urgent traffic. It was felt that the enemy could never drop enough bombs to create a problem that could not be solved by temporary re-routing of such traffic. Prompt clearance of the narrow streets in residential areas was not considered essential for air defense.

b. *Administrative Changes.* The paper organization in the prefectures and cities usually known as the air-defense headquarters included in all cases the chiefs of the public works department, together with their deputies in charge of roads, bridges and waterways, respectively. Actually, the air-defense headquarters of a prefecture was a police-controlled arrangement for achieving coordination of damage information and dispatching defense forces, including road and bridge personnel, to trouble spots. Thus, the final local responsibility for road clearance and repair rested with the chief of the defense headquarters, for it was he who issued commands to prefectural public works personnel. In some cities, local police stations had this authority and could order out local units of prefectural or city public works forces. It should be emphasized that this clearance and repair planning involved no new agencies or personnel; but was simply a scheme for centralizing authority in the hands of the police.

c. *Construction Unit.* At the same time that the air-defense headquarters were set up throughout Japan, there was established an emergency public works construction unit (Okyu Doboku Kosaku Dan) in each of the prefectures. A plan setting forth the organization, procedures, training and operations of the unit was issued by the Ministry of Home Affairs and was designed to put the regular public works forces on a wartime basis. It recommended that no new personnel be added, but that existing forces be organized so as-

to make the most effective use of personnel and equipment on hand. Suggested training was confined to "maneuvers" calculated to increase the speed with which the forces could be assembled and dispatched to places of need, and to "spiritual strengthening for increasing determination". Each prefecture organized several companies of the unit and these were divided into platoons and squads located throughout the area. Reports of strength, equipment and training were to be sent periodically to the Ministry of Home Affairs, but, in practice, these reports were perfunctory, or were not forthcoming at all.

d. *Equipment.* Only in the Tokyo Metropolitan District were the amount and character of clearance and repair equipment at all adequate to the problems that arose. In other cities, even before it had been commandeered by the army, road equipment was primitive and consisted largely of hand tools, except for rollers and trucks. When the army took over most of the last two items there was little motorized equipment left. Kobe claimed to have had bulldozers on order, but in view of the low priority given to civilian requirements, it was doubtful whether they would ever have been delivered, even if the plant manufacturing the bulldozers had not been destroyed. Between the destruction of equipment caused by the raids and the acute shortage of motor fuel, the public works departments were virtually without motorized equipment after the air attacks started.

e. *Auxiliaries.* At about the same time that the emergency construction unit was established, there was set up on a national basis a labor patriotic unit (Romu Hokoku Tai) from which was recruited the emergency repair unit (Kinkyu Kosaku Tai), organized by local police districts and subject to their authority. The members were artisans of various kinds, carpenters, masons, plumbers and electricians who, although paid for the services they performed, were nevertheless under orders from the police and were liable to call at any time no matter what their regular occupation might be. A second source of aid was the special guard unit of the police (Keibitai), one subdivision of which, under instructions from the Ministry of Home Affairs, was presumably to train itself in techniques of debris clearance and repair of public installations. Assistance was considered to be available from the auxiliary police and fire units (Keibodan) and also from neighborhood groups (Tonari Gumi). In the planning for clearance, no specific inclusion of the army was made, either at the national or local levels. Debris clearance in industrial plants was left to the owners.

f. *Operations.* (1) *Clearance.* Despite rather elaborate plans, clearance operations were confused and slow. This was partly due to lack of coordination among the several groups responsible for the work and partly because there did not appear to be any great urgency in the matter. The personnel, equipment and organization were adequate for handling damage from stray bombs dropped during the first few high-explosive raids which were aimed primarily at industrial targets; but as soon as the great fire raids began, the plans broke down almost completely. There was practically no clearance work done during the raids themselves because of (1) the intense heat, (2) the dispersal of clearance personnel, and (3) the fuel shortage which had virtually eliminated motor traffic. After the raids were over, the principal streets were cleared by the emergency public works construction unit, and the various auxiliary clearance units described above worked on a local neighborhood basis. The latter was somewhat haphazard since the streets to be cleared were, in most cases, in areas that had been completely burned down. The Japanese did not have to cope with the serious clearance problems created by high-explosive attacks on buildings of heavy construction, as was the case in Germany, and that was fortunate because they did not possess the necessary equipment. The practice was to bring such motor transportation as was available for rescue to the edge of the bombed areas and to remove to that point the trapped and injured by hand-carried stretchers; there was no other immediate reason for opening up the streets. The role played by the army varied from city to city; in Tokyo the army supplied considerable help on its own initiative, sending 5,500 troops to assist in clearance work on one occasion, but in most cities the army furnished little or no help, and was said by civilian officials in Osaka to have felt itself above that kind of work. In case the Japanese mainland might become an area for land fighting, one would suppose that the army would have made plans for clearance to facilitate military traffic. No such planning involving civilian participation was discovered. Records of clearance activities by public works construction units were claimed to have been destroyed; and no records of clearance

work of auxiliary groups were said to have been kept. Of the latter, however, the work of the auxiliary police and fire units was described as being the most effective.

(2) *Repair.* There was no recorded instance of road or bridge repair while an air raid was actually in progress. Except for isolated damage done during the early high-explosive raids, relatively little damage to roads and bridges resulted from the later incendiary raids. Steel and concrete bridges were unaffected, although wooden bridges in the burned areas were either totally consumed or were burned beyond repair. High-explosive bombs damaged riverbanks in Tokyo, Osaka and Kobe; and priority for quick action was given them because of the danger of flooding adjacent areas. Poor coordination of forces, lack of transportation, disrupted communications and lowered morale combined to reduce the effectiveness of repair efforts almost to the vanishing point by the end of the war. Auxiliaries did not possess the necessary technical skill nor the equipment to be of much value. In many cases, repair of streets was complicated by simultaneous repairs to ruptured water mains or underground gas or electric installations. When the damage was local and when transportation and communications were still intact, the street damage from the early raids was repaired with fair speed and efficiency. The mass fire raids caused a general breakdown of all emergency public works repair services, and delays in the restoration became greater. During the late spring of 1945, these delays extended from a few days to several weeks. It was one month, for example, before the Tokyo waterways had been cleared of burned-out bridges and debris after the great March raid. Even a single 500-pound bomb-hit near an elevated station in downtown Tokyo in April 1945, caused a street to be blocked for 16 days, despite the use of 250 laborers in the street repair alone. In this case, as in many similar instances, the road repair was held up not only by lack of organization among the several groups responsible for repairs to underground installations, but by poor discipline of curious crowds and general confusion resulting therefrom.

4. *Restoration of Public Utilities.* a. *Water Supply.* In all Japanese target cities, the city-operated water works were regarded as highly important to air defense. Each metropolitan area set up an emergency water restoration unit (Suido Kosaku Tai) similar in organization to the emergency public works construction unit of the road departments. No new personnel were added nor was the wartime training given the regular personnel systematic or thorough, for it was felt that the peacetime forces were already qualified to handle all emergencies. Breaks in water mains caused by the early high-explosive raids were repaired in a matter of hours, but there was a marked falling off in efficiency as the raids increased in severity, as water personnel became casualties or were dispersed, and as transportation failed. Untrained auxiliaries from the police guard units and the auxiliary police and fire units attempted on several occasions to make temporary repairs to damaged water mains, but such efforts were uniformly futile because of the lack of technical training. Not only did the inefficient repair operations hamper fire-fighting activities, but road, gas, electric and street railway restoration operations were set back by delay in the control of flooding.

b. *Electric Distribution and Gas Service.* Whether privately or municipally operated, these public utilities went through the motions of establishing their maintenance forces on a wartime basis, but the net result was simply the giving of an emergency title to these forces. Calls for help from wartime auxiliary organizations were infrequent, and such as were made occurred on the basis of immediate expediency rather than reflecting advance planning. In general, the private companies relied upon independently hired labor, or upon summoning trained personnel from neighboring communities. Under the difficult transportation conditions, delays in restoring service were inevitable. So complete was the destruction of areas served by these utilities that it was not generally thought worthwhile to attempt restoration of services during the last few months of the war. The repair of even the most important installations was ruled out by lack of materials.

c. *Street Car Systems.* Of all the public services, government or private, including road maintenance, the most efficiently organized for restoration were those of the surface transportation systems. Like the gas and electric companies, street car systems elected, in general, to manage their restoration problems without appeal to emergency auxiliary units, believing that untrained help would be of small value; but, unlike most of these companies, street car organizations were

generally unable to depend upon help from technicians in near-by communities. In Tokyo, and to a lesser extent in other cities, emergency repair squads were stationed in various parts of the city, were supplied with necessary equipment and were given special training through simulated bomb-damage situations. Except for the complete destruction wrought in the two cities hit by the atomic bomb, street car service was partly or entirely restored ahead of other public utility services in all of the major Japanese cities. Repairs to tracks were often delayed by inefficiency in street clearance, bridge restoration and water-main repair but, considering their vulnerability as targets, street car installations and equipment, after repeated bombings, were brought back into operation with an effectiveness not characteristic of Japanese restoration efforts as a whole.

5. *Repair and Demolition of Buildings.* a. *Repair.* While the prefectures and cities had construction departments charged with making plans for post-raid repair of buildings, there was little by way of planning and virtually nothing by way of operations. It was presumed that a plan of official action would evolve when raids began, but there was never any serious governmental intention to restore any buildings except those belonging to the government, even in the case of hospitals, food warehouses or other privately owned structures used by the public. The householder was left strictly to his own devices. The fire raids destroyed wooden buildings beyond repair but some stone and concrete buildings were left standing, partly burned out, mainly in downtown areas. Whatever repairs were possible to these buildings was left to the self-protection units (Tokosetsu Bogodan), special building guards composed of employees of each establishment. By the time the air raids began, the shortage of building materials was so acute that even tentative repair plans were abandoned in favor of a building utilization program whereby government and business activities were moved to buildings that survived the raids. Temporary housing for homeless persons was non-existent, and such individuals either moved in with families whose homes escaped destruction, or went to the country.

d. *Demolition.* The subject of removal of dangerous walls that might menace passing traffic, so important in German civilian defense operations, received scant attention in Japan. Had the large cities received major high-explosive raids, a serious problem in the downtown sections would have arisen in this respect. In spite of the expectation that high-explosive bombs would be the main weapon employed by the enemy, no preparations for demolition were made. When damaged buildings became a public menace, the official policy was to hold owners responsible, and no official action was taken with respect to unsupported walls until they actually fell into the street and became objects of street clearance. No case of the use of dynamite or carbon dioxide tubes for demolition was recorded; even demolition to create firebreaks was done manually so as to save materials.

6. *Salvage.* The only salvage operation in which there were official interest was that of collecting metals. The combustible nature of most Japanese structures was such that the tremendous fires burned everything, including household possessions. In view of that, looting was not a serious problem nor was the disposition of property which had been deserted by owners during raids. The government carried on a metal salvage program before the raids began through a government-operated metals salvage control company (Kinzoku Kaishu Tosei Kaisha), in which all metals not essential to daily living were collected from homes and business establishments, paid for and sent to war industries. A national law provided that all salvageable metals remaining on burned-out property beyond 30 days after a raid could be collected by the company and, if left unmarked by the owners, automatically became the property of the government without any compensation. Materials salvaged from the extensive firebreak programs could be retained by the owners or might be purchased by the government; if bought by the latter, they were allocated on a priority system to war industries. While trucks and fuel were available, the metals collection program operated with considerable efficiency, but the air attacks completely demoralized salvage efforts, dispersing salvage personnel and making it necessary to divert trucks to more urgent uses.

7. *Comments.* Planning for clearance, repair and restoration in Japan lagged far behind that for other phases of air defense. Even when the national, prefectural and city air-defense headquarters were set up in 1943 and 1944, and public works departments were officially included in over-all defense plans, there resulted only minor preparatory activity among the various public

works agencies concerned. In communicating its instructions to the prefectures, the Ministry of Home Affairs did not indicate that there was any great urgency about these preparations, and it is reasonably clear that the national public works officials did not themselves know what was developing on the fighting fronts. With such a late start, it would have been impossible for the Japanese to have made any preparations that would have fundamentally altered the extent of destruction to road, bridge and public utility installations; nor could much have been done about assembling restoration equipment and materials that were critically scarce. Limited amounts of both materials and equipment were possessed by the army, but they were unavailable to civilian users, even for official purposes. On the other hand, there was much in the way of recruiting and training volunteers or conscripts, and of coordinating the several auxiliary defense organizations that would have resulted in a more effective use of the available man power and in a quicker resumption of relatively normal operations. With the exception of Tokyo, the prefectural officials complained that they were short of labor and that it was impossible to compete for such labor as remained because of the high wages paid by war industries. This situation could have been avoided, had there been an earlier and a more realistic anticipation of the problems that were to arise. Road work in Tokyo was hampered by the over-employment of laborers, where there were always several times as many men as were needed on any given job. The operations in Japan were summed up accurately by the chief of the public works department in Osaka prefecture when he said that confusion and uncertainty among restoration agencies invariably following a major raid was "typical of the Japanese—too much organization and not enough coordination and cooperation."

V. PROTECTION OF FACTORIES, UTILITIES, INSTALLATIONS AND BUILDINGS DEVOTED TO PUBLIC USE

A. FACTORY AIR-RAID PROTECTION

1. *Development of Program.* The original conception of air-raid protection in Japan was not inclusive, and the first law (April 1937) omitted any special approach to factory protection. In November 1937 an effort was made, varying in degrees of earnestness among the prefectures, to establish a factory program designed to train personnel in the conventional activities connected with air-raid defense. But it was not until 1939 that a noticeable effort was made by the imperial government to induce factories to organize seriously.

2. *Control and Responsibility.* a. Control of factory air-raid protection was divided among three main agencies of the imperial government: the Ministry of Home Affairs, the Ministry of Munitions, and the armed forces.

b. Responsibility rested upon the shoulders of the owners in the case of privately-owned plants; on the operators, in the case of government-owned but privately-operated plants; and on army or navy authorities in the case of government-owned or operated plants and installations.

c. In addition to the three main agencies, the Ministries of Welfare, of Agriculture and Forestry, and of Transportation also had interests in the protection of certain factories. Each of the above sponsored its own special policy for factory air-raid protection, and the result was continuous bickering and general dissension regarding who was responsible for each type of factory and how its protection should be administered.

d. Originally the Ministry of Home Affairs had jurisdiction over air-raid protection in most of the empire's factories and, in the early stages up to 1943, it made sporadic efforts to interest factories in air-raid protection. In November 1943 it became apparent that the Ministry of Home Affairs alone was not capable of administering factory air-raid protection, and jurisdictional divisions were made to correct this weakness. The Ministry of Munitions was to take jurisdiction over all plants which were engaged in heavy industry with the exception of shipyards and arsenals. Shipyards and arsenals were assigned to the army or navy. All plants supplying medical supplies were left to the Ministry of Welfare; factories producing fertilizer were assigned to the Ministry of Agriculture and Forestry; locomotive producers were placed under the Ministry of Transportation; and all small factories not assigned to other ministries were grouped together under the Ministry of Home Affairs.

e. In spite of this effort to clarify jurisdictional

control, lines of demarcation were not clearly drawn, and a condition resulted wherein some factories had to answer to the army, navy and the Munitions Ministry for their air-raid procedures.

f. As part of the reorganization in 1943, the Air-Defense General Headquarters was established at ministerial level in an effort to cure some of the ills of Japanese air-raid defense, and the industrial air-defense section was formed within its planning bureau.

g. Staff personnel of the Ministry of Munitions was constantly changing and, as a result, protection units of industries under its control suffered accordingly. This ministry had several field teams whose duty it was to visit facilities after air raids, inspect damage, analyze results and suggest remedial action. Heavy industry throughout the empire was supposed to be covered but, toward the end of the war personnel and transportation became so critical that it was impossible to cover more than fifteen major plants and these only infrequently.

h. Prefectural police were called upon throughout the empire to assist in the administration of air-raid protection of all plants assigned to the Ministries of Home Affairs and Munitions. It was the policy to assign military and navy personnel to plants under the control of those agencies but, because of the shortage of available military personnel, the police were called upon to function as inspectors. Generally speaking, air-raid protection was an additional duty for police personnel who had little technical knowledge of what was required of them and, as a result, inspections in the factories followed the set standards of pamphlets distributed by the ministries, and little initiative was used.

i. Factories were required under basic air-defense laws to organize self-protection units from among their employees. Pamphlets were issued from time to time by the various ministries, outlining methods of organization but, in general, they were vacillating, wordy documents designed to put the onus of protection on management. The ministries, the army and navy were strong on directives but weak on assistance given. Each agency was quick to state what should be done but did not assist by securing priorities for necessary materials.

j. *Comment.* Organizations were well laid out on paper and, in all instances, formed into actual operating units as directed. Plans were elaborate, but equipment was in most cases too crude and ineffective to cope with concentrated attacks and large fires. The execution of plans as originally conceived was successful when there were scattered incidents but failed in heavy raids.

3. *Organization.* The directives and pamphlets issued by the government for the establishment of factory air-raid protection emphasized the requirement of "self-protection"—that is, the organization of self-protection units (Bogodan) among the regular employees of the plant for the self-contained protection of premises and personnel without outside aid and without the employment of full-time personnel for the purpose. A typical organization prescribed that the chief executive or active manager be responsible for security and be the active head of the air-raid-protection organization. Beyond that point, management was given a free rein to form such organization as it considered best to meet each factory's peculiar needs, using the suggested organization as a guide. The only hard-and-fast requirement was that the responsible governmental agency must be satisfied that the protection, as organized, was adequate. Some of the typical features of organization were as follows:

a. A small or medium-sized plant with a compact group of buildings usually organized only one unit consisting of selected personnel: leaders, foremen and the most able-bodied, with some attention to their residential proximity to the plant. The president or general manager assumed the position of chief and appointed a staff and headquarters group consisting of department heads for staff assistants and including selected telephone operators, airplane spotters, messengers and liaison personnel. Special squads of varying size and numbers to meet the requirements of local conditions generally included the following: guards (security guards, order guards, fire watchers, airplane spotters and guides); fire-fighting squads; rescue squads; first-aid squads (frequently the last two were combined in a rescue and first-aid squad); gas-protection squads; repair squads; food and supply squads. The balance of the employees were organized into reserve groups for special night duty or as replacements for the regular squads. This also made for easy handling in case of evacuation to the shelters.

b. In large plants covering an extensive area, multiple units similar to the above were organized as necessary throughout the plant. These groups were commanded by prominent officials

of the plant and the entire organization was headed by the president or the active chief executive.

c. *Fire-Fighting Units.* These varied to a considerable degree. Some large plants had a professional, full-time department with equipment comparable to that of the usual Japanese city fire company. Others consisted entirely of part-time auxiliaries trained by the city fire department. Sometimes the units were consolidated into a central department and, in other instances, separate squads with their equipment were distributed strategically throughout the plant area. Additional squads were given training in the use of sand, flails, water buckets, hand pumps, extinguisher bombs, poles, ladders and the like in putting out incipient fires. The heavier equipment consisted of motorized pumpers up to 500-gallon-per-minute capacity. But there were fewer of these than of the hand-drawn motor pumpers with capacities of from 100 to 250 gallons per minute. There was extensive use of hand pumpers with capacities of about 100 gallons per minute. Morale and discipline in these units were generally high until a heavy strike or an overwhelming fire would emphasize to them the inadequacy of their equipment.

d. *Medical.* Medical organizations were divided into the emergency medical and hospital medical units. Large plants had well-equipped and well-staffed hospitals on the premises which ministered to daily industrial injuries as well as to air-raid casualties, whereas smaller units had arrangements with local hospitals for assistance when needed. All plants, large or small, had regular first-aid squads operating from first-aid and casualty stations. Training and equipment of these units were commensurate with the size and wealth of the plant or the enthusiasm of the management. Large wealthy establishments which were well equipped before the war with hospitals and medical staffs had a fairly sound medical policy. Small units, or units which were born of the war, were exceptionally lacking in all but the most rudimentary first-aid equipment, chiefly because nothing else was available. One typical large industry plant had a 101-bed hospital, staffed by 22 doctors, 40 regular nurses, 11 student nurses and 13 pharmacists. It had complete operating and X-ray facilities. This hospital was augmented by three casualty stations and 1200 stretcher stations which were well equipped for major and minor first aid, respectively. On the other hand, less fortunate factories with bombed out hospitals had no doctors and none but the most rudimentary first-aid packets which, in many cases, did not even include antiseptics.

e. *Repair.* Repair units in large installations were organized around the plant maintenance department and were assisted by volunteer units in those areas of the plants involving special processes. In small industries, repairs were conducted by departmental workmen with the tools of their trade. Toward the end of the war, however, because of the lack of repair materials, many repair units confined their activities solely to clearance.

f. *Reserve.* The organization of reserve units followed two patterns in Japan: one method was to group all persons of poor health, poor hearing or other infirmities, persons with little education, menials, and personnel who could not easily return to the plant during off-duty hours into an inactive reserve which was to be called upon only in case of dire emergency; the other method was to assign the above-mentioned personnel, as inactive members, to air-raid-protection units in their particular departments.

g. *Food.* Most large corporations maintained emergency supplies of food for the relief of employees in critical periods. In many instances efforts were made to fortify the national ration to bring it up to 2,600 calories per day for the factory workers. In cases of protracted raids or severe damage to workers' homes, the factory made a practice of feeding workers and their families until they could become re-established.

h. *Control Centers.* Control centers, like medical establishments, varied with the wealth of the plant, but on the average they were inadequate. Some large installations had elaborate primary and secondary control centers. One large plant had a control center located in a subterranean basement of the administration building and another on the roof of an adjoining building. The roof control center was the main unit and was built of heavy concrete and steel, surrounded by medium anti-aircraft units and concrete spotter stations. Equipment included telephones, emergency switchboards, auxiliary power, public address systems and private wires to strategic lookout posts and other stations of the plant. Pill boxes, control center and spotter stations would have succumbed to direct hits by 500-pound high-explosive bombs but otherwise served

as good shelter. The basement shelter would have withstood all armor-piercing high explosives under 1,000 pounds. Other centers varied from improvised offices in wooden structures to hillside caves.

4. *Shelters.* a. Usually shelters were conspicuously inadequate. Lack of materials (steel and concrete) prevented the construction of shelters that afforded protection against anything but fragmentation and blast. There were notable exceptions as, for example, the tunnel shelters in the Nagasaki Shipyard of Mitsubishi and the concrete and steel shelters of Japan Steel in Tokyo. By and large, most shelters were improvised basements, earth and wood structures, and slit trenches. They were neither fire nor gas proof and were insufficient in number.

b. The general policy adopted by industry was one of conservation of workers' productive time. Evacuation to shelters was effected quickly at the eleventh hour, a moment frequently determined by management itself on the basis of intelligence received from the army and from its own observers. Frequently two sets of shelters were provided, if space was available: reinforced basements and shelters within the factory compound, and trench shelters in open spaces away from the plant. The latter were to be used only if it were determined that the plant was to be the direct target of an attack. Shelter and evacuation discipline waned toward the end of the war as raids became heavier and more frequent.

5. *Water.* Sources of water were city mains, near-by sea or river water, and private water systems fed by deep wells or storage tanks. City pressure mains had theoretical pressures up to 65 pounds per square inch but were of little value due to the terrific city drain during large-scale raids. Private systems were usually electrically powered and failed during raids, thus leaving only static reserves of water for protection. That, coupled with poor and insufficient pumping equipment, gave an over-all capacity that was, without exception, inadequate to cope with large-scale incendiary raids.

6. *Protective Equipment.* a. Pumping equipment was generally inadequate either in size or number of units. The best motorized pumpers mounted on truck chassis had 500-gallon-per-minute capacity. Equipment of auxiliary units included hand-drawn gasoline pumps of from 120- to 250-gallon-per-minute capacity, or hand-operated of 25- to 100-gallon-per-minute capacity. Hose was in all cases insufficient and the maintenance of it and of the pump equipment was so poor as to preclude efficient operation. Shortage of fuel made frequent tests of equipment out of the question so that frequently, when personnel tried to use it, it failed and burned with the buildings it was designed to protect.

b. Chemicals were in use in many factories, but most of the metal hand extinguishers had deteriorated for lack of care and inspection. Some plants used globular glass containers filled with carbon tetrachloride or similar solutions.

c. Hooks, ladders, beaters, mats, buckets for water and sand were in abundance but were generally useless against all but small, stray incendiary fragments.

d. Automatic sprinkler systems were conspicuous by their absence, and in many cases management personnel did not even know of the existence of such devices.

7. *Air-Raid Warning.* Many important industrial war establishments received an early confidential warning, subsequent warnings and other raid intelligence by telephone direct from the army warning central, the prefectural air-defense headquarters, or some other source, and were permitted discretion in the issuance of warnings within the plant. This was done to maintain production to the utmost. In other cases, the plant was included in the regular warning system affecting the public, but its officials could still hold employees to their work until their own orders for clearing the plant were issued. Still other plants were subject to the same warnings and rules of conduct as the general public.

8. *Mutual Aid.* Mutual aid was in general all to the plant and not from it. Arrangements were made to get help from city departments, other plants and auxiliary police and fire units (Keibodan). Interplant assistance was satisfactory but city and auxiliary police and fire unit assistance existed in name only because most individuals were usually too busy saving their own property to bother about that of others.

9. *Operations.* a. Operations were characterized throughout the empire by futile efforts on the part of willing personnel, strongly organized into a workable team which failed because of the absence of equipment. When subjected to saturation raids, even in the largest and best equipped plants of the empire, the maximum accomplishment was the protection of personnel by evacuation and the isolation of big fires.

b. In all raids, personnel of most factories stayed at their work during the "alert" period, then hastened to shelters at the leader's command. When bombers came in waves, keeping personnel shelter-bound for long periods, fires attained a head start, and personnel could do little more than attempt to save undamaged buildings from the flames.

c. By August of 1945, deterioration and raid damage had made such inroads on equipment in most plants that there was not enough of it to handle incidental industrial fires.

10. *Dispersal.* While general dispersal plans were theoretically considered throughout the war, government orders to disperse seemed to have been given out to different industries at different times. Some received orders in October 1944; some later in February 1945; and others still later in June 1945. Dispersal was late in getting started but a few plants had critical equipment and processes up to 75 percent dispersed by May 1945 and would have been well dispersed or underground a year later. These were notable exceptions, however. By and large, most factories were not dispersed over 25 percent and many heavy industries not at all. Methods included moving whole plants to rural areas, moving small machinery to private homes and school houses, and tunnelling. At the end of the war there were about 95 plants in underground tunnels, totalling about 7,000,000 square feet of floor space. These tunnels were generally so hastily engineered and constructed that they were insanitary and subjected machinery to serious corrosion. But they operated and produced.

11. *Protective Measures.* Protective measures included the separation of buildings, segregation of hazardous processes, rural storage of critical equipment and supplies, protection of valuable machinery with blast walls. In some cases large machines were recessed below floor level and covered with steel plates. Blast walls were effective but fire lanes and separation were almost useless in the event of large-scale attack because of the dispersion and number of bombs.

12. *Light Control.* Compliance was rudimentary and included blackout curtains (until materials became short) and the simple expedient of turning off lights at the "alert" signal.

13. *Camouflage.* Camouflage was in all cases poor. Lack of paint and materials hampered effectiveness of all efforts which, in general, were exceptionally crude.

14. *Comments.* a. Management throughout the war demonstrated a vital interest in the protection of property and personnel within the limitations of the mediocre equipment available to it. It was strong on plans and weak in their execution, mainly because of the material deficiency.

b. Considering the handicaps under which it labored, the performance of the personnel was, in general, highly commendable. Whereas pre-raid absenteeism among regular employees, both male and female, ranged from 20 to 30 percent (and about 13 percent among student employees), absenteeism was increased by heavy bombing only about 10 percent among adults and 14 percent among student employees.

c. Compared to all Japanese air-raid-protection organizations, those of the factories rated very high—probably second only to those of the national railroads.

d. No total figures were available but cross-section observations indicated comparatively low casualties among employees on the job.

e. In spite of poor equipment and short-sighted water supply provisions, fires and damage were fought with a will. Post-raid recovery and resumption of production were commendably rapid, and failures were occasioned more by exhaustion of basic materials than by any deficiency of the factory emergency-protection and restoration forces.

B. RAILROAD AIR-RAID PROTECTION

1. *Introduction.* a. The railroads of Japan—only 70 years old—developed rapidly to a point beyond their needs in the first 60 years, then failed to keep up with the rapid industrial growth of the last prewar decade, and were punished with a functional overload during the war period.

b. The mountainous topography dictated the scroll-like pattern of the network, caused the perimeter roads to follow the sharp convolutions of the coast line and made literally thousands of tunnels necessary. Many gaps, impracticable for railroad grading or tunneling, were closed by bus and truck lines.

c. British capital initiated the system, and its early influence was still apparent in physical details. First-class sleepers and coaches were similar to those used in England, although the latter with bogie trucks were on the average of larger capacity, but were still smaller than the American type. The second- and third-class sleep-

ers and coaches resembled the American "tourist" type of sleeper and day coach, respectively. The predominant gauge was 3½ feet, although other gauges were in use ranging from 2½ to 4 feet 8½ inches.

d. Steam was the predominant locomotive power but much of the main line was electrified or equipped for dual service. Most inter-urban rapid transit was run by electric power. About 100 internal combustion locomotives were in use, largely on nongovernment railroads.

e. Roadbeds in general were excellent; wood ties, crushed rock bed, rock fill and, in some coastal strips, piling foundations were used.

f. With prewar provisions for about 10 million tons of freight per month, the capacity was overloaded during wartime to as much as 15½ million tons per month, which war damage and lack of maintenance reduced to 9 million tons before the end of the war.

g. Passenger service designed for about five million per day actually moved eight million per day, even though 20 percent of the regular facilities were converted to freight use. Of these users, only 38 percent paid fares and the balance traveled on passes. The latter were railroad and government employees and authorized war workers.

h. There were 538,800 scheduled miles on the national railroad every 24 hours, as of 20 June 1945, about one-third of which was for passenger service.

i. Other general statistics helpful to the understanding of the Japanese railroad picture and pertinent to the realization of operating and security problems follow:

Item	*Amount*		
	Government-owned	*Nongovernment*	*Total*
Locomotives	6,100	672	6,772
Passenger cars	11,000	1,010	12,610
Electric cars	2,000	9,616	11,616
Freight cars	120,000	9,626	129,626
Ferries	48	------	------
Track (miles)	21,076	5,578	26,654
Bridges	36,279	6,603	42,882
Tunnels	2,285	------	------
Building space (million square feet)	123	46	169
Land (acres)	151,753	121,000	272,753
Railroad stations	4,093	5,640	9,733
Communication lines (miles)	419,507	58,833	478,340
Automatic Signal lines (miles)	1,526	1,796	3,322
Electric sections (miles)	816	381	1,197
Electric power supply lines (miles)	19,977	------	------
Bus line working miles	2,645	------	------

j. *Railroad Communications.* Although all railroad offices, stations and installations had the regular government-owned "public" telephone system service for communication with outside agencies, the railroads maintained a separate complete communications system of their own, utilizing 478,000 miles of telephone and telegraph wire and hundreds of telephone exchanges and telegraph sending and receiving stations. Most of the lines were strung aerially along the rights-of-way and, together with exchange and relay installations, were highly vulnerable.

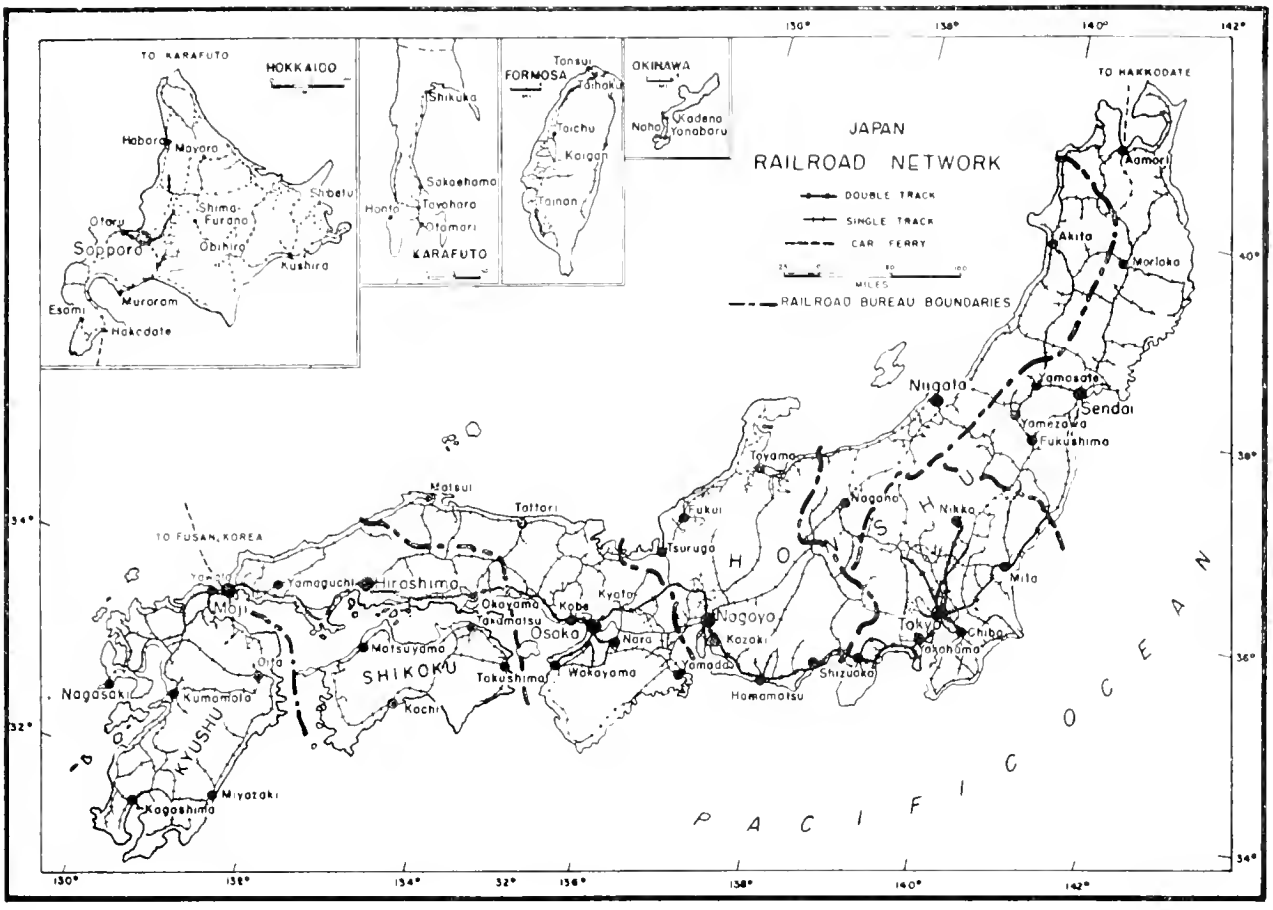
k. A map showing the national railroad network and its division into railroad operating regions called bureaus is shown on the following page.

2. *Administrative Organization.* a. About three-fourths of the railroads of Japan were government owned and operated. Forty-three relatively small private companies owned and operated the remaining one-fourth which consisted mainly of interurban lines, belt lines, connecting lines and small extensions in remote regions. These small lines were supervised, used and subsidized by the government when necessary during the war period. The organization described on the following pages is that of the government-owned railroad system.

b. Government supervision at the national level was under the Minister of Transportation (until December 1943, the Minister of Transportation and Communications). This Ministry was also responsible for private railroads, marine transport, harbors, waterways and highways. Frequent reference is made to a "Minister of Railroads" but there is none other than the one Minister of Transportation. A railway council within the Ministry established all policies and conducted the business of the system. This council had the minister for its chairman, and its members were heads of nine staff divisions:

(1) General Affairs and Secretariat.
(2) Traffic and Operations.
(3) New Construction.
(4) Maintenance.
(5) Mechanical Engineering.
(6) Electrical Engineering.
(7) Finance and Stores.
(8) Private Railroads, Tramways and Highway Transportation.
(9) Air Defense.

c. The detailed operation was decentralized to eight regions or "bureaus" (Kyoku) with bureau headquarters at Sapporo, Sendai, Niigata, Tokyo, Nagoya, Osaka, Hiroshima and Moji. Each bu-



reau operated as a separate system, the whole being coordinated by the ministerial railway council. Each bureau was headed by a "president" who was the active leader and director of the bureau's affairs. To assist him, there was a staff corresponding to the staff at the national level.

d. The bureaus in turn were subdivided into divisions and sections without complete decentralization—that is, important installations (such as large car shops and the like) geographically within the divisions or sections of railroad were directly supervised by the bureau.

e. The organization was a quasi-military one. The employees were uniformed and given authority and pay in six echelons of rank:

(1) "Chokunin": appointed by emperor. They were the highest officials, heads of staff divisions, presidents of bureaus and directors of important installations.

(2) "Sonin": appointed by the diet on recommendation of the Minister of Transportation, highest officials next to (1) above.

(3) "Hanin": appointed by the Minister of Transportation.

(4) "Tetsudoshu": appointed by officials of "Chokunin" rank (foremen and similar officials).

(5) "Koin": appointed by officials of "Sonin" rank (highly skilled workers and minor officials).

(6) "Yonin": appointed or hired by foremen and others of "Tetsudoshu" rank.

g. Presidents of railroad bureaus, operating in multiple prefectures were equal in governmental and class rank with the governors of each prefecture. Matters of overlapping authority were almost invariably handled by formally polite cooperation and coordination. Usually, great care was exercised by each not to infringe on the prerogatives of the other. Most possible causes of friction were anticipated by the two ministries (Home Affairs and Transportation) and "recommendations" handed down simultaneously, which "saved face" for all concerned. Policy control of nongovernment railroads and related private agencies was exercised through the bureau presidents.

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b. Annual surplus of revenue over operating expense during wartime averaged five hundred million yen.

3. *Organization for Air-Raid Protection*, a. Prewar planning for air defense was a nebulous affair. A great deal of main-line trackage followed the flat coastline and was near tide water. Earthquakes, floods and tidal waves furnished much experience in meeting major emergencies and natural disasters. Home Office literature and exhortations on "Air Defense" were apparently ignored, but the canny and basically practical railroad officials carefully digested them and filed them away for future reference and reproduction.

b. During the early wartime period, some actual organization was effected. The existing setup and chain of command were employed. The military scoffed at the possibility of heavy raids, but the railroads, nevertheless, proceeded with physical preparations such as construction of shelters, organization of warning systems, rules of conduct and strengthening of medical and repair forces.

c. In June, 1943, a special organization was set up to handle defense. An "Air-Defense General Headquarters" was added to the ministerial railway council, and air-defense sections to bureau staffs, which were headed by the presidents of each. The bureau staffs consisted of department managers—men of "Sonin" or "Hanin" rank. Divisions, sections and principal installations, in turn, formed air-defense sections with superintendents in charge, it being required that the highest executive at each level be the active chief of air defense. The principle of self-protection was employed in organization. It was a "must" for each unit, section and installation to organize a self-contained air-raid-protection organization to protect its own personnel and property almost to the last extreme before calling for help from the next higher echelon, a parallel one or from the local authorities. The typical self-protection organization at the operating level (known as "Bogodan") was as follows:

(1) A director or chief.

(2) A headquarters section and staff.

(3) An observation and warning section (lookouts, messengers, telephone operators, criers).

(4) A guard section to maintain order, direct evacuation and guard property.

(5) Fire-fighting section or sections.

(6) Rescue and first-aid section or sections.

(7) Supply section.

(8) Sometimes a gas-protection and decontamination section.

(9) All others were organized into units or sections to rotate alert duty by roster, furnish replacements to the regular defense units and otherwise be ready for orderly evacuation. The size of a section or installation generally decided the size and number of such units, but all employees had some part to play.

d. Policies, regulations and rules were put into effect as follows:

(1) *Air-raid warning* was received from the nearest army warning central and disseminated to those concerned at the discretion of the director (president) through the railroad communication facilities. Public alarms were ignored and action was taken only on command or local signal from railroad authorities, except where surprise bombs fell.

(2) *Lighting rules* were of a practical nature. Blackouts in buildings were enforced. Outside illumination was dimmed and shaded, or extinguished, if it were not essential to operation. Signal lights were dimmed by reduced current at the power source, and directional laminated shades were installed to prevent above-horizontal beams. Blackout shades on passenger coaches were drawn.

(3) *Traffic* was regulated at the section or installation level. Upon the warning comparable to the American "blue" the public was either evacuated from stations and other buildings or conducted to available station shelters, or a combination of the two. Employees went to shelters on the "blue" or the "red" signal at the discretion of the station master or other installation chief. If trains were approaching or were in stations, the station master decided on the movement or action to be taken. If en route in open country, the conductor was in command with full power of decision. Generally, if under direct attack or if attack were imminent, evacuation and dispersal were in order, but the general tendency was to keep trains moving until certain of direct attack.

(4) *Shelter Policy.* The construction of shelters was liberal as to capacity but inadequate as to protection against high-explosive bombs or gas. Covered-trench shelters for 15 to 20 persons dotted the open spaces near all installations. Building basements were reinforced and existing tunnels and spaces under elevated track beds were reinforced and prepared for use by installing concrete or timber and gravel baffle walls.

All employees contributed labor for shelter construction during and outside of regular working hours.

(5) *Fire fighting* was a weak link in the chain of defense, chiefly due to poor equipment. Equipment ranged from mobile motorized pumpers and portable hand pumps, to barrel or bucket brigades and beaters. Incipient fires were well handled but, invariably, heavy concentrations of incendiary bombs were too much to handle. Hence most efforts were centered on the isolation of big fires.

(6) *Emergency medical* matters were well organized. Each of the eight bureaus had a large, comparatively highly rated company hospital, equipped with a professional staff of doctors, nurses and pharmacists. The average was a 200- to 250-bed hospital with 50 physicians and surgeons, 150 to 160 nurses. In addition, each bureau maintained 15 to 20 out-patient dispensaries with from one to five doctors and from 5 to 15 nurses each. The air-raid protection units of all sections and installations had well trained auxiliary units for first aid, rescue and evacuation.

(7) *Maintenance of railroad lines* was organized by bureaus and divisions. Emergency repair trains loaded with heavy repair tools and material were spotted in readiness at strategic locations, averaging about five to each bureau. Additional emergency repair cars were loaded and spotted with at least one in every small railroad section. Material dumps were established with as heavy a supply as was available. The regular peacetime force of repair workmen (numbering about 30,000) was increased to 60,000 laborers and skilled repairmen and organized into 242 repair units supervised by a force of 4,000 engineers and skilled foremen and subforemen.

(8) *Maintenance of rolling stock* was done by 15 factories and 25 railway workshops with roundhouse and car-repair shops for minor repair in each railway center.

(9) *Railroad communication maintenance force* under the electrical engineer section of each bureau consisted of technicians, linemen, polemen and laborers totaling 21,000. They were subdivided into bureau, division and sectional units. They were partly motorized but depended mainly on rail transportation.

4. *Operations.* a. At the close of the war the railroads had not yet been a primary target although slated for early specific attention. Rail transportation and facilities, however, suffered considerably from secondary target attack and from secondary damage from fire and attack on other primary targets- certainly enough so that the air-raid-protection plan and organization were put to a severe test in which they turned in a fairly creditable performance.

b. An appreciation of the extent of their emergency problems can be had by the following summary of damage sustained by the government-owned railways:

Items destroyed	Number	Percentage
Locomotives	891	14.4
Passenger cars	2,228	19.2
Electric cars	563	28.1
Freight cars	9,557	8.0
Ferries	23	48.0
Miles of track	1,130	5.0
Bridges	12	1.2
Buildings (square feet of floor space)	16,150,000	13.1
Railroad stations	100	2.4
Miles of communication lines	55,921	13.2
Miles of automatic signal lines	2,610	63.0
Power plants	18	26.0
Rolling stock, Factories and main repair shops	21	52.0
Trolley wire (miles)	93.2	11.1

It is interesting to note that this percentage of damage averages 21.8; that Japanese railroad officials estimated offhand that the over-all railroad damage was 20 to 25 percent; that most of the damage occurred in the war period of 1945; and that in that period freight tonnage actually declined 39 percent from peak due to reduced capacity. Another index to the extent of "trial by fire" of railroad defense organizations was that over 13 percent of the extensive office and building space normally congested with workers was destroyed by raids.

c. Lighting regulations were meticulously adhered to, a fact attributable partly to control at the source, partly to discipline. Most officials, however, declared that its protective value was slight because fires from pilot raids quickly illuminated vast areas. The measure assisted, however, in the conservation of valuable power.

d. Train movements were at the discretion of the pertinent chief, station master or conductor. The policy of continuing movement was considered better than immobility. If stations were under heavy direct attack, it was natural for all concerned to seek cover but, if under light or incidental attack, all were agreed that trains fared better when they proceeded on their way into open country. Most individual strafing occurred too suddenly to permit stopping and evacuating a train, although this was usually attempted if spotters could give a few minutes' warning.

e. Control of organizations under raid conditions was outstandingly good. The leaders of air-raid protection were identical with the chiefs of regular services. The military type of organization lent itself to automatic control in emergencies. Decentralization of authority down through the echelons of official rank provided the background for intelligent continuation of activity at each level even when units or sections were isolated by destroyed communications. A well organized messenger and liaison service assisted in filling communication gaps. Further, employees were generally of a higher type than those of most large organizations.

f. The principle of "extended self-protection" —each section and installation responsible for organizing its own defense unit (Bogodan)—operated well under raid conditions. In actual practice, the principle proved to be sound. The leader's prerogative of planning his own organization to meet his peculiar needs was successful. This principle required the exercise of more initiative and more attention to detail than the stereotyped plan or table or organization would have called for. Again, the national characteristic of an exalted sense of personal responsibility for an assigned task was an important element. Individuals were inclined to "carry the message to Garcia" even though they knew "Garcia" was in Timbuktu—or dead. Thus plans were carried through (or a reasonable facsimile thereof), even though the situation called for a change in plan and the use of initiative. The result was frequently costly but, in the main, operation was more successful than undisciplined abandonment of plans would have been.

g. Maintenance of roads, rolling stock and communications—well organized generally—failed because of the few weak links:

(1) Stock piles of repair material were depleted and not replenished. Critical materials, chiefly steel and copper, were withheld by higher authority to an unsound degree.

(2) Rolling stock was used long after it was so dangerous that train speeds had to be reduced. Although 50 percent of the shops were destroyed, the remaining ones could have handled more repairs, if material had been made available.

(3) No system of mutual aid between bureaus was perfected. Improvement could have been accomplished by a balancing and interchange of emergency labor and material. A few army railroad units operated, but not extensively.

(4) Electric locomotion—the most vulnerable —was the least prepared for restoration. Whereas track repair was quick and efficient permitting rapid resumption of steam traffic, electric power transmission, once dead, was dead for weeks and sometimes for months.

(5) The railroad air-raid-shelter policy was liberal only in comparison with that of other large organizations. Capacities were ample, enough for all employees and passengers. Over $10,000,000 was expended. Although the shelters proved effective under the circumstances that obtained, the loss of life in them would have been enormous if either gas or a preponderence of high-explosive bombs had been employed.

5. *Comments.* a. Railroad air-raid protection was unquestionably outstanding in comparison with all other utilities and with other civilian defense organizations. Its advantage over other similarly organized utilities was that of sound and continuous leadership. Its standard organization, well established long before the war, was undisturbed throughout. No internal reorganization or disputes of jurisdiction at the top impeded the progress of the defense effort. System, discipline and morale already existed and the defense scheme, even if imperfect, fitted smoothly into the existing organization.

b. Railroad officials were highly conscious of their vulnerability had the aerial attack switched to heavy high-explosive bombing or to use of gas, but did nothing about either except figuratively to hold their breath. The actual performance in protection of personnel was remarkable. While 20 to 25 percent of the physical facilities were destroyed and, in the face of the policy to keep trains rolling on schedule even through air raids, less than one half of 1 percent (2,500) of employees was killed on duty. In numbers, even fewer passengers (2,300) than employees were killed or injured.

c. Maintenance policies were unbalanced between personnel and material. Organization for repair and restoration was exceptionally good except that depleted material reserves were not replenished nor was the distribution of material properly coordinated. Electric locomotion proved to be much more vulnerable than steam and less subject to quick restoration. Steam-drawn train service was quickly restored even in the two atomic target areas.

d. It is evident that no concentrated, large-scale strategical attack was directed specifically

against the railroad transportation system, yet there was approximately 20 percent "incidental" damage inflicted. It was quite apparent that this percentage of damage was almost the limit of the railroad's ability to absorb successfully. Possibly the organization for the protection of personnel and the actual organization for maintenance and restoration could have survived a great deal more punishment than they received. However, with the imminent exhaustion of repair materials, it seemes likely that direct blows against the railroads in mid-1945 might well have paralyzed the nation.

e. Japan was highly dependent on its railroads. Highway transportation was so meager as to be a negligible factor. Coastwise shipping was first reduced to augment inter-island supply lines and then suffered near extinction from constant attack. Consequently, the facilities of the railroads were vital to both the war industries and to the very existence of the people. These facilities were remarkably well maintained and operated to the end of hostilities, much to the amazement of railroad officials themselves who wondered why they were not singled out for concentrated attack.

C. NATIONAL COMMUNICATIONS AIR-RAID PROTECTION

1. *Introduction.* All communications of Japan, including the postal system, telegraph, telephone and radio, were principally owned and completely controlled by what was virtually a government monopoly. The control was all-inclusive, the ownership was total except for some of the radio broadcasting facilities.

2. *Government Control and Organization.* a. Until December 1943, all communications were operated by a council within the Ministry of Transportation and Communications with the minister as chairman—an organization almost identical with that of the national railroads. Personalities in high places, however, and pressure influences from private interests caused a constant turmoil of reorganization the history of which is interesting but not pertinent to this report. This circumstance, however, and resultant jealousies accounted for the procrastination and neglect of air-raid-defense preparations. From December 1940 the army exerted considerable influence and demanded and obtained a large portion of tele-communications for war purposes. In December 1943, by diet recommendation and imperial decree, all communications matters and management were removed from ministerial control and put under the National Communications Board which was organized to operate as a separate agency directly under the prime minister.

b. This National Communications Board (Teishin Kyoku), established by Imperial Ordinance No. 304, continued the general administrative and organizational schemes of the quasi-military communications organizations. It provided for rank distinctions in personnel very similar to those of the railroad system, described in paragraph 2 e of the report on Railroad Air-Raid Protection (Page 105). A president was appointed with "Shinin" rank (virtually equivalent to a minister), and a table of organization established stipulating the rank for all officials, engineers, clerks, technicians, doctors, foremen and laborers. Personnel in all categories totaled nearly half a million. The board was established with eight main staff divisions with functions as follows:

(1) Secretariat—office and personnel management, filing and records.

(2) General Affairs—planning, policies, property finance, general supervision.

(3) Services—supervision of telegraph, telephone and postal communication service.

(4) Electrical Engineering—including all maintenance.

(5) Censorship—for all communications.

(6) Postal Savings and Finance—including money orders and similar financial matters.

(7) Electric Waves (Dempa)—concerning techniques and standards but not service.

(8) Air-Defense General Headquarters.

c. Detailed operation of all communication matters was decentralized to nine regions or bureaus (Teishin Kyoku)—individual communication networks of all the services, each including geographically from 6 to 10 prefectures. The bureaus were named for the bureau headquarters city of each as follows: (1) Toyohara (2) Sapporo (3) Sendai (4) Tokyo (5) Osaka (6) Nagoya (7) Hiroshima (8) Matsuyama (9) Kumamoto. Each bureau was directed by a president of "Chokunin" rank who was appointed by the emperor and who had full charge of all communication matters within the bureau, subject to the direction of the national president and board. His staff was similar to that of the national board but larger, for his was the actual supervising agency. All service installations and communication activities were supervised and directed by

the bureau. The importance of these bureaus is evident from the fact that the army administrative districts were organized coterminously with them.

3. *Organization and Description of the Services.* a. *Post Office System.*

(1) Class I post offices were larger metropolitan installations called "Central Post Offices" to denote importance and rank. This distinction was given to main post offices of Tokyo, Osaka, Kobe and Nagoya, but they had no supervision over other installations.

(2) Class II post offices were large individual postal buildings similar to Class I in every way, except in size and rank. There were 503 of this class in Japan.

(3) Both Class I and Class II post offices were headed by regular communications service personnel of high rank (Sonin or Hanin), and operated a complete service of mails, money orders, postal savings and insurance, plus telegraph and messenger services.

(4) Class III post offices, 13,615 in number, were distributed throughout the neighborhoods of large cities and the towns and villages. They gave regular mail service, including delivery and, in country places, the equivalent of United States rural free delivery. They handled mail orders, savings and insurance through the nearest Class I office or through bureau headquarters, depending on location and convenience. The postmasters in towns or communities not served by a Class II post office were nominated by the people of the community and their appointments were passed on, rejected or confirmed, by the bureau president. Supervision of all post offices (individual installations) was under the services branch of the bureau.

b. *Telegraph System.* (1) There were 17 large central telegraph offices throughout Japan. Branch offices were installed in all Class I and II post offices, and telegraph service was furnished in almost all of the 13,000 Class III post offices and about 2,000 railroad stations.

(2) The service was extensive and highly rated for efficiency in peacetime. Although it had fewer public offices per capita than England, Germany, or France, it was second only to the United States in the number of messages sent (almost 100 million in 1910).

(3) Radio telegraph was in use before the war among the principal cities, but was subsequently taken over by the army and restricted or discontinued as a security measure.

(4) Most of the telegraph lines were bare wires strung above surface on poles.

(5) The telegraph service was supervised by the services division of the bureaus. Each large installation was directly under this division but control of the smaller installations was decentralized to the postmasters concerned.

(6) Each bureau's central telegraph office was connected with direct lines to every other bureau, and all messages within the bureau areas were relayed radially. In metropolitan areas and large cities there were underground vacuum tube connections between all principal offices.

c. *Telephone System.* (1) Japan's telephone system was not rated highly in service efficiency but actually stood high in the volume of services rendered. With a rating of fifth in the number of subscriber telephones, it was second only to the United States in the number of individual calls handled. With 1½ telephones to each 100 persons in all Japan, the heavily populated areas had 4½ to each 100 of population. Long-distance lines were developed considerably in the immediate prewar decade. There were 106 principal telephone offices and over 6,000 exchanges.

(2) The above was known as the main line system. In addition to it, the railroads and the national police maintained their own separate and independent telephone communication systems.

(3) The army, which as a wartime measure had a priority use of the main line system, also had a separate network briefly described in paragraph 3d below.

(4) The administration of the main line telephone system was supervised and operated by the services division of the national communication board through the regional bureaus just as were the administrations of the telegraph and postal systems.

d. *The army communications network* employed the main line telephone and the regular telegraph services for its administrative and command purposes. In addition, the engineering department of national communications designed and installed a separate intelligence and air-raid-warning network that was elaborate and highly efficient. It consisted generally of a ring of telephone stations, available to observation and intelligence personnel, around each army district headquarters with a direct wire from each to a separate instrument in the army headquarters. A total of 792 such lines was established

throughout the country, which was supplemented by telegraph lines in case of failure. Extensive plane-to-ground and ship-to-shore radio communication was also used in the intelligence and warning network.

e. *Radio* for communication purposes was government owned. It was employed extensively before the war for international radio telegraph and telephone service. Radio for broadcasting was largely privately owned but closely supervised. The army had an arrangement whereby it could cut into any broadcast directly from its stations in army headquarters.

4. *Organization for Air-Raid Protection.* a. The study of early air-defense planning for the protection of communications installations and personnel reveals the poorest performance of any of the utilities. This is hardly understandable when one considers the elaborate preparation this department made to furnish warning network equipment for the army. The army gave assurance that attacking planes would never reach their objectives, but this was not the real reason for procrastination. It was because of dissension and jealousies among top government agencies and because of too frequent reorganizations that air-raid defense was neglected.

b. While apathy in the council delayed preparations for defense, the propaganda and public education vigorously propounded by the Ministry of Home Affairs was having its effect on hundreds of thousands of communications employees and minor officials. As a result personnel of most departments and installations organized themselves into air-raid-defense units (Bogodan) along the self-defense lines proposed by the Ministry of Home Affairs. This was done under the authority of half-hearted directives from the transportation council which made some appropriations for material and equipment but paid little attention to supervision.

c. The Doolittle raid in April 1942 served to awaken the optimists. The accounting department head was added to the group supposedly responsible for air defense, more appropriations were made, and training of personnel and construction of shelters were begun with official supervision.

d. The final and most successful reorganization came in December 1943 with the withdrawal of communications control from the Ministry of Transportation and Communications, the creation of a separate communications board and the appointment by the emperor of a president who, at last, was an enthusiastic proponent of air-raid defense. Almost at once the organization which, like Topsy, had "just growed" and had been indistinct and blurred, came into focus in the pattern long advocated by the Ministry of Home Affairs. Supervision from the top was instigated and vigorously exercised.

e. The general defense headquarters (Teishin—Boeisohonbu) was formed in December 1943. It consisted of the president of the board, the directors of all staff divisions, selected members of the secretariat, and other assistants as needed. There were two main departments or branches for:

(1) Policy making, plans and training, intelligence and dissemination of information and warning.

(2) Operations, supply, construction (and demolition), evacuation, shelters, emergency relief, and the organization and active management of the defense of the communications board building.

f. The general defense headquarters directed the plan for local defense, prescribed the formation of a defense headquarters at each bureau similar in form to the general headquarters and delegated to it the active and direct supervision of all defense.

g. The next echelon of command was in the individual installations. It was required that the chief executive of each installation be the active director of air defense and that all employees be organized and trained. Thus, the chain of command was not through the separate services of telephone, telegraph and postal systems but direct from the regional bureau headquarters to each individual communications unit, building or installation.

h. The chief of each installation or building was given full discretion in organizing his unit or units but his plan was subject to inspection and approval by the bureau. The typical organization was as follows:

Air Defense Chief and Staff
- Observation Squad
- Communications Squad
- Warning Squad
- Fire-Fighting Squad
- First-Aid Squad
- Rescue Squad
- Gas-Protection Squad
- Supply Squad
- Reserve

(2) Variations of the above usually consisted of different arrangement of squads such as the combining of rescue and first-aid squads, the organization of multiple units to operate on different floors and the like.

(3) The highly trained main defense unit comprised about 20 to 30 percent of the total employees.

(4) The reserve consisted of the remainder of the employees, trained for replacements and organized by roster to perform extra-hour alert duty.

i. *Maintenance and Restoration* were not directly a matter for the air-defense headquarters since it was already established under the chief engineer. It became, however, its chief concern and the president of the board who was director of air defense was enjoined by the emperor to "establish telecommunication construction offices wherever the president recognizes the necessity and wherein the matters concerning telecommunications restoration shall be directly executed." As a result, repair sections formerly centralized were subdivided, increased and established within easy reach of all communications centers.

j. *Emergency medical services* were organized under the regular communications medical service which, however, had only one official hospital with an augmented staff of about 100 doctors. The need for a greater number of hospitals had not been felt because communications personnel had used railroad hospital facilities. When casualties overloaded the capacity of the latter's hospitals, arrangements were made in each prefecture by communications authorities to provide local hospitalization. Out-patient dispensaries were installed and a local auxiliary unit established in each such installation.

k. *The shelter policy* before December 1943 was lax and consisted mainly of digging slit trenches in the vicinity of installations. After that date over $4,000,000 was expended. Trenches were improved and covered with timber and earth and additional shelters were constructed in space created by firebreak demolitions. Roofs of telephone, telegraph, post office and office buildings were reinforced with steel and concrete and, where feasible, basements and first stories were given an abutment reinforcement. A photograph showing an example of basement reinforcement appears on the following page.

6. *Censorship*, the policies of which were established by the Ministers for War, Army and Navy, was operated for telecommunications, mail and radio by the censorship division of the national communications board.

7. *Operations.* a. Air-raid damage to communications and communications facilities was extensive—more so than that to any of the other utilities. Repairs and restoration lagged, and the end of the war found communications badly crippled. The following summary of damage is as of the end of hostilities and does not include progressive restoration during the war period:

(1) First and second-class post offices destroyed —94 or 18.5 percent.

(2) "Special" or class three post offices destroyed —1255 or 9.2 percent.

(3) Telegraph buildings destroyed—7 or 41.2 percent.

(4) Telephone buildings destroyed—13 or 12.3 percent.

(5) Construction and maintenance offices destroyed—21 or 23 percent.

(6) Bureau headquarters office buildings destroyed—2 or 22.2 percent.

(7) Savings bureau branches destroyed—16 or 52 percent.

(8) Insurance bureau buildings destroyed—1 or 20 percent.

(9) Communications schools destroyed—3 or 27 percent.

(10) Wireless school buildings destroyed—1 or 10 percent.

(11) The large office building that housed both the national communications board and the Tokyo bureau was totally destroyed.

(12) Eighty-one telegraph offices were damaged beyond use and their salvaged facilities were crowded into other offices.

(13) Thirty-one other branch telephone buildings were destroyed, and the services of all but seven abolished. Part of the service of these seven was restored by use of old magnetic exchanges.

(14) Of the suburban telephone lines, 6,687 or 39 percent were destroyed.

(15) Of 1,074,836 urban subscriber lines, 523,230 or 49 percent were destroyed.

(16) Seventy-nine percent of all telegraph lines were destroyed and useless at the end of the war.

b. *Conduct of Air-Raid Defense.* (1) After the lethargy of the pre-December-1944 period, the new regime entered the field of air defense as a primary activity. It required only the "green

ught" of top level control to make that activity highly popular, and the response was quick down through the echelons of command. Chief executives of bureaus and individual installations, who had almost surreptitiously used initiative and organized for defense, as well as those who had previously complied with the "suggestions" in an offhand manner, now responded to the eleventh hour vigor of the directives and quickly attempted to whip their personnel into shape for effective operation. To say, however, that effective defense was created would be far from the truth.

main defense against fire was the static water supply and bucket brigades. Even this crude method worked well against incipient fires and scattered hits but a heavy concentration of incendiaries spelled doom to a building. Supply of new material was almost nil. The failure to equip the civilian defense forces properly early in the game left them almost helpless to protect property when the heavy raids struck.

(3) Restoration of damaged services must be classed as the weakest link. It is true that telecommunications were highly vulnerable. The

Reinforced concrete base of the central telegraph building in Tokyo

The personnel served with exceptional willingness, courage and high morale and, when under fire, followed their training procedures almost to the letter. Their training, however, had been for single incidents and light raids, and the procedures were as antiquated as the equipment with which they had to work. Management had been too late with too little.

(2) Defense equipment was poor and inadequate. Pumpers, both motorized and manual, delivered streams to first and second floors but in the higher stories (of which there were many in the office buildings) this equipment was useless because of lack of water pressure. Hence, the

overhead wires of the telegraph service, the preponderance of overhead wires and above-surface cables of the telephone service threaded through the congested areas made them subject to destruction by fire. A well-organized repair and maintenance force of 13,000 repair men, technicians and laborers soon exhausted the meager reserves of wire, instruments and equipment and, thereafter, they were hopelessly slow in salvaging damaged materials and installing makeshift connections even for the most essential communications. Three months after the cessation of hostilities public communications were still hopelessly out of order.

(4) The one outstanding example of operational recovery in midwar was the construction of the "Kojimachi Branch" of the telephone system. This was located in Tokyo and was so remarkable a piece of planning and engineering that it deserves special mention in this report. When it was demonstrated by the earlier raids that communications were so highly vulnerable, this installation was planned and constructed to take over essential communications in case of the destruction of other facilities. At a cost of 5,382,733 yen (over $2,000,000) it was completed and equipped ready for operation in November 1943. Its construction from an engineering standpoint was far superior to that of any similar structure observed in Japan or Germany. A complete building was erected consisting of five stories, half below ground level and half above. Over this, a second structure was erected of heavy reinforced steel and concrete. This outer building was entirely independent of the inner one and left a 32-inch air space or cushion between the two. The base was mounted on 362 concrete pilings extending 40 feet into the ground. Neither the side walls nor the bases of the two structures were tied together underground and the outer structure was free to vibrate or give way under shock without disturbing the inner structure. The shell was nine feet thick, elliptical in shape and, from design and construction, could reasonably be expected to resist 1-ton bombs successfully. Plans and material for additional layers up to 33 feet of thickness were ready for immediate construction, if bomb sizes were increased. It was one of the very few gas-proofed installations and the only completely gas-proofed large building in Japan. Equipped with local and long-distance equipment that could cut in and take over essential disrupted service via underground cable, it actually operated successfully when other services were destroyed in Tokyo, Yokosuka, Shiba, Tachikawa, Chofu and Osaka. For a long period, it furnished the only communication existing between the points of the triangle formed by Tokyo, Yokusuka and Osaka. Photographs and diagrams of this building are shown on Pages 115 to 121, inclusive.

8. *Comments.* a. Some of the favorable features of communications air-raid defense were as follows:

(1) Defense was organized down through the existing chain of command. The chief executive of each echelon was required to be the active leader of air defense.

(2) The morale, discipline, willingness to serve and attention to duty of the rank and file of employees were good.

b. Outstanding weaknesses were:

(1) Procrastination of national leaders in prewar and early wartime defense efforts. Failure to enforce and supervise early organization and training.

(2) Planning failed to consider more than defense against light bombing and small incendiaries.

(3) Shelters for personnel protection, though adequate in capacity, were crude, uncomfortable and furnished protection only against flying splinters and light bombs.

(4) Reinforcement of large buildings for protection of equipment was resistant only to light bombs.

(5) Plans for well protected alternate communications stations were well made and one large such installation completed and placed into successful operation. Yet with this excellent experiment tried and proven to be effective, no attempt was made to carry the plan to completion.

(6) Air-raid-defense equipment was antiquated and in short supply. This was especially true of fire-fighting equipment and gas-defense material.

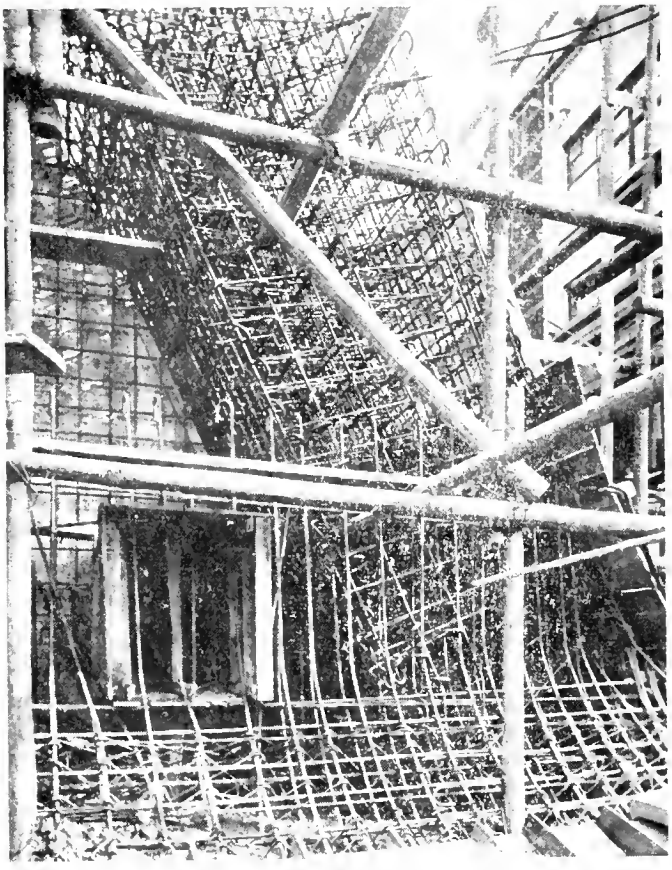
(7) Reserve material for repair and replacement of equipment, instruments and lines was quickly exhausted. Advance planning did not anticipate the needs, and emergency supply became impossible.

D. HARBOR AIR-RAID PROTECTION AND PORT SECURITY

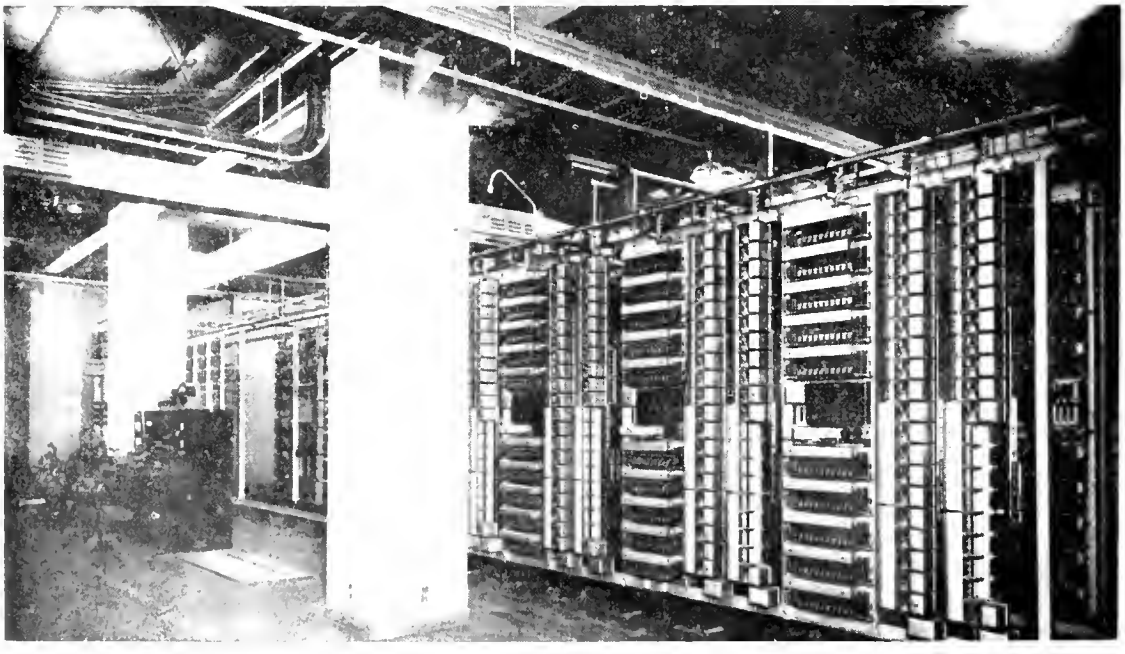
1. *Introduction.* a. It was natural for Japan, a small insular country with teeming millions of population to engage in commerce and shipping and for a large portion of its people to follow occupations connected with the sea. The uneven coast line had 30 improved harbors and official ports and hundreds of small harbors used as fishing and coastwise shipping ports. At the beginning of the war (December 1941), the regular merchant marine consisted of 2,736 steel merchant ships with a total gross tonnage of 63,840,000. This figure was exclusive of all wooden ships and of all ships, wood or steel, under 100 tons gross. The figure was also exclusive of all ships assigned to the army and navy as auxiliary ships;

"Kojimachi" Tokio emergency telephone center (front view).

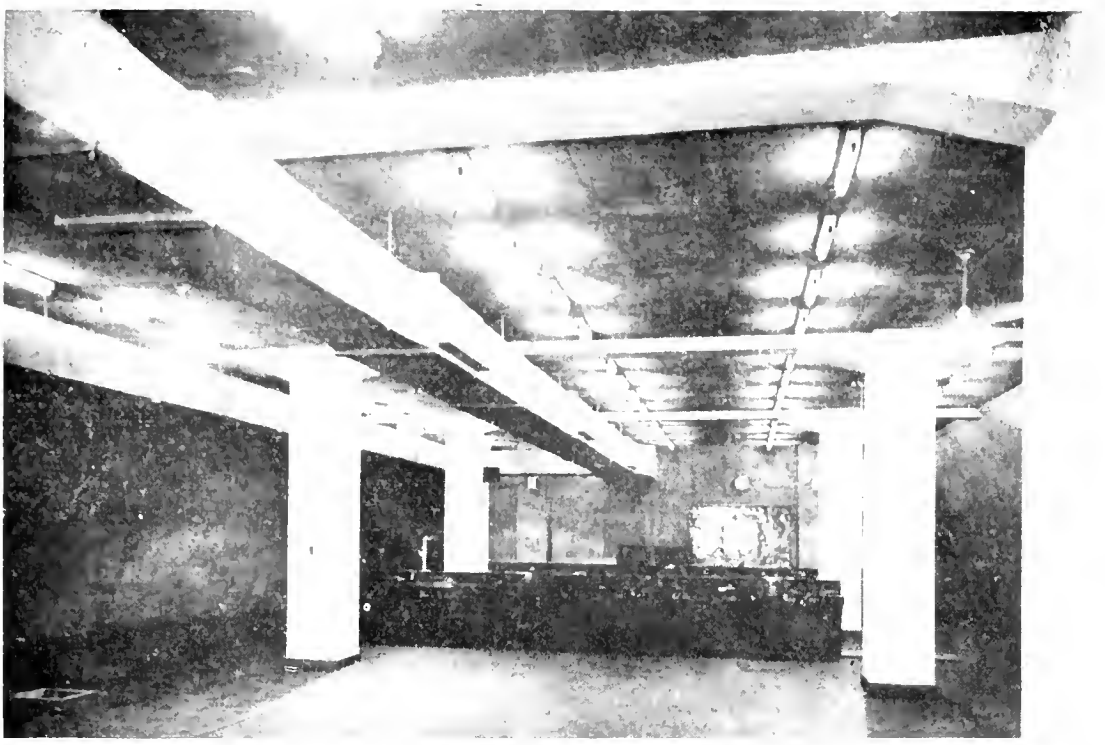
"Kojimachi" Tokio emergency telephone center (view from rear, air exhaust on left).



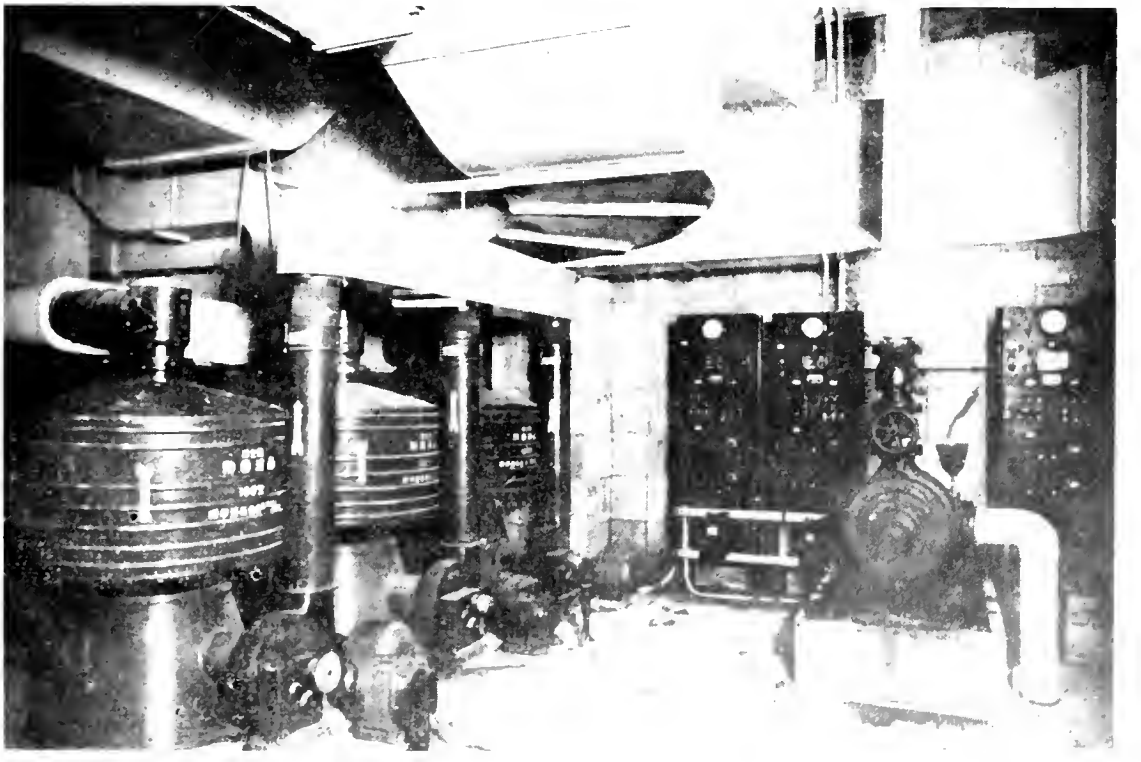
Steel reinforcing of cover structure, emergency telephone center.



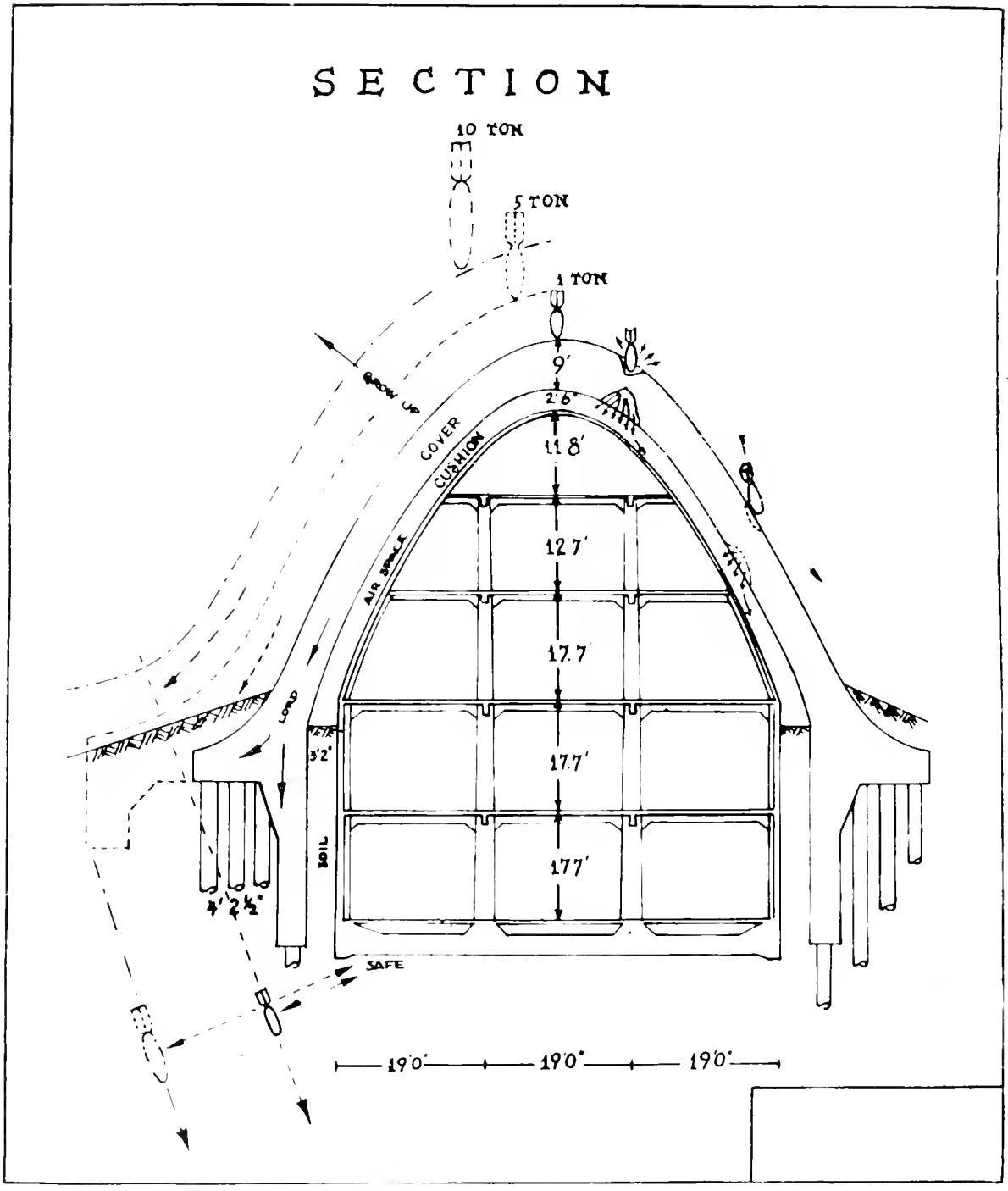
Emergency telephone center, second floor—local lines selector boards.



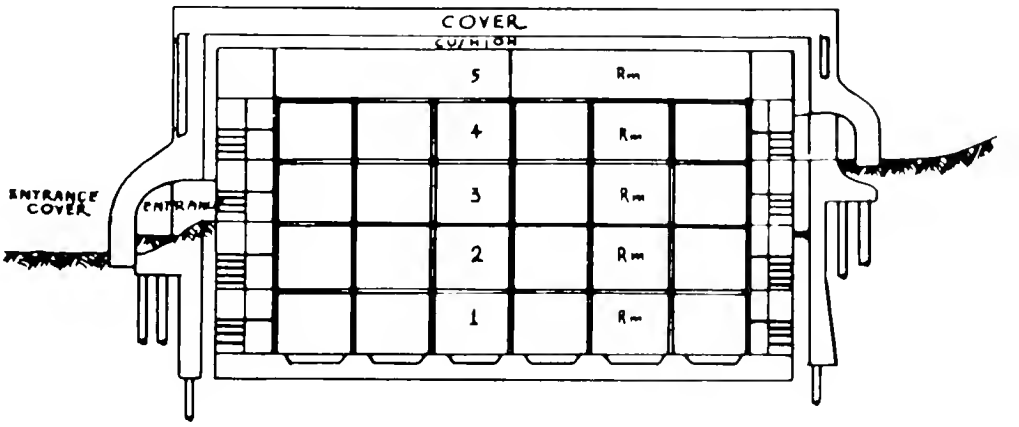
Emergency telephone center, fourth floor—long-distance telephone exchange room.



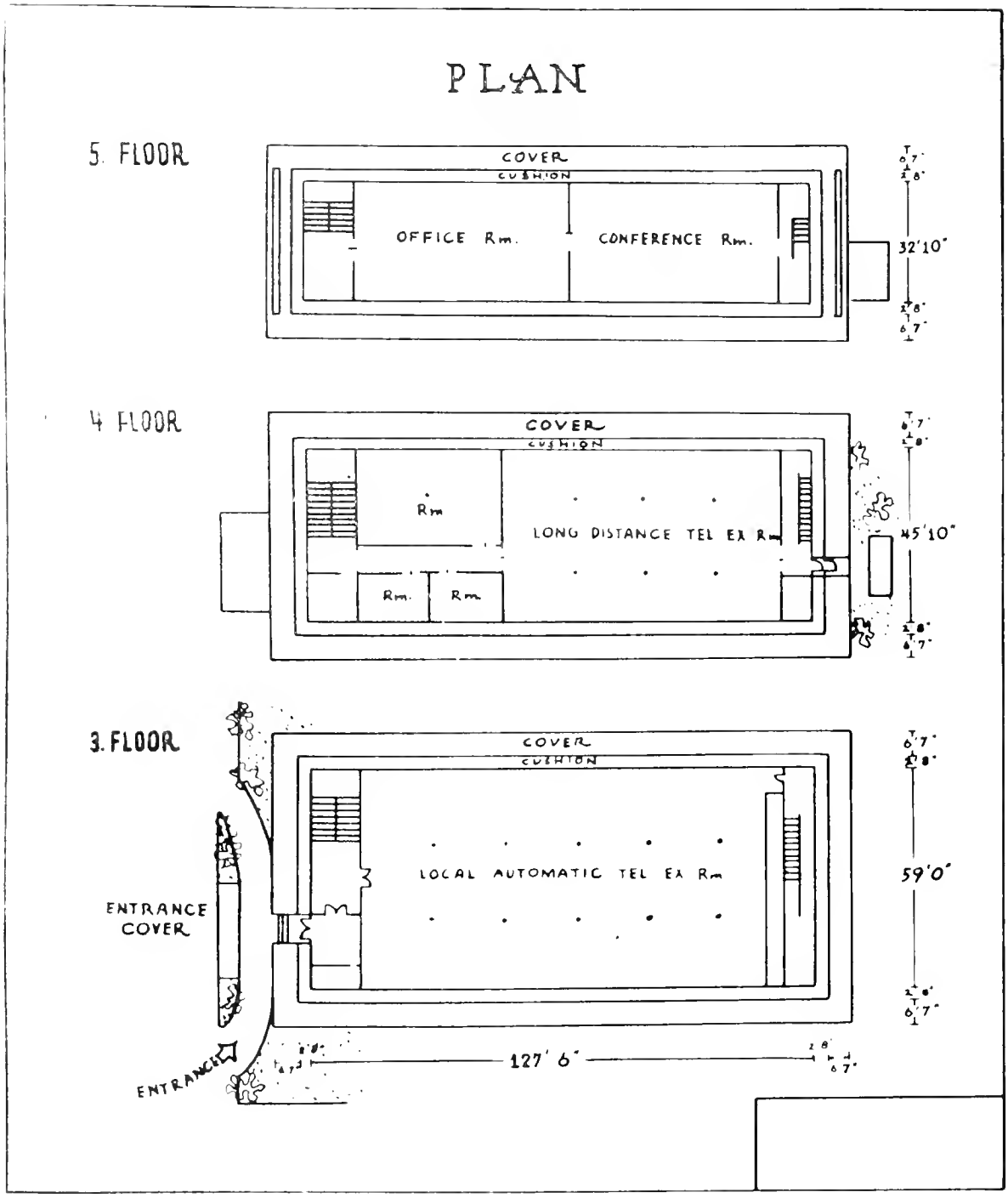
Emergency telephone center gas filters.


SECTION
10 TON
5 TON
1 TON
9'
2'6"
11.8'
12.7'
17.7'
17.7'
17.7'
COVER
CUSHION
AIR SPACE
LOAD
3'2"
SOIL
4'2½"
SAFE
19'0"
19'0"
19'0"

SECTION

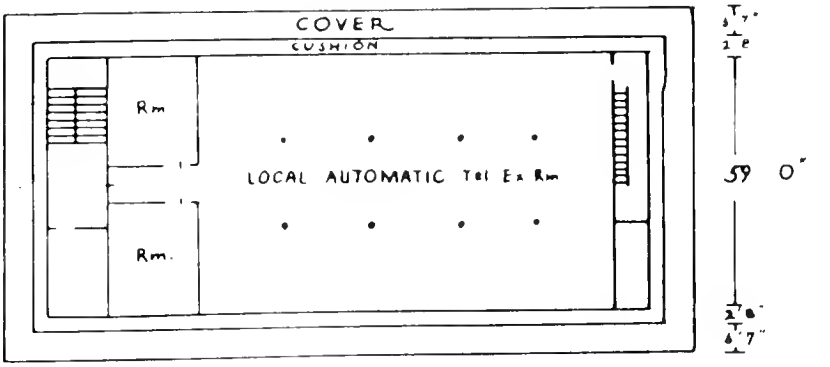


PLAN

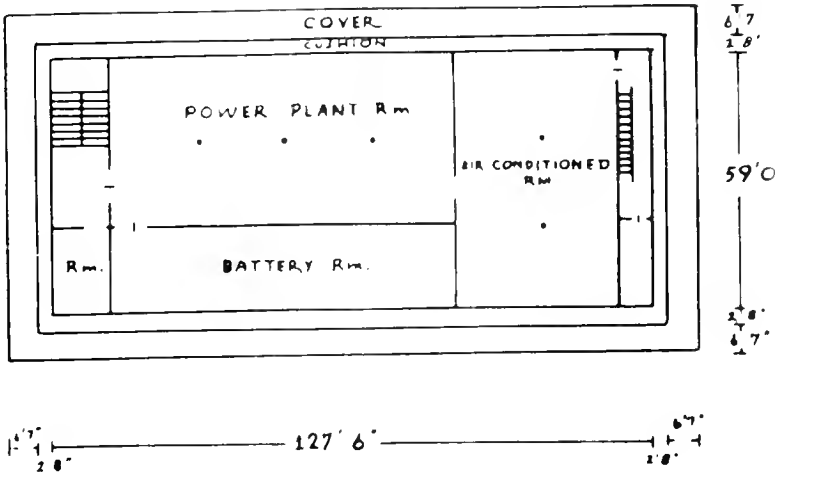

5. FLOOR
COVER
CUSHION
OFFICE Rm.
CONFERENCE Rm.
32'10"
4 FLOOR
COVER
CUSHION
Rm
LONG DISTANCE TEL EX Rm
Rm.
Rm
45'10"
3. FLOOR
COVER
CUSHION
LOCAL AUTOMATIC TEL EX Rm
59'0"
ENTRANCE
COVER
ENTRANCE
127' 6"

PLAN

2. FLOOR



1. FLOOR



of all naval vessels, harbor vessels, work ships and the like.

b. The harbors were mostly excellent natural ones, the facilities of which had been improved by modern construction. The principal ports had been improved by dredging and the construction of breakwaters. The use of stone, concrete and steel in the construction of docks, wharves and piers was predominant over that of wooden pilings. Harbor waterfront areas were congested with warehouses, railroad yards, shipbuilding facilities, heavy industries, factories and other port enterprises. Business and densely populated residental areas were jammed hard against the crowded water-front areas as though shipping were the main source of livelihood—which was usually the case, at least in the early days of each harbor city's history. Most port cities were located on a flat plain at the mouth of a river and usually a network of canals connected the harbor proper with near-by inland industry and commerce. Photographs of typical harbor facilities are shown on Pages 123 to 126, inclusive.

2. *Organization for Administration of Harbor and Port Affairs.* Due to diversified interests, there was no one central agency to control the water area, the landward-side water-front area and the pier and bulkhead strip between the two. Control of these areas was divided among the following agencies:

a. *National Maritime Bureau.* Marine affairs were reorganized many times during the war period but at all times had ministerial leadership. First, they were headed by the Minister of Transportation and Communications and, after December 1943, by the Minister of Transportation and a Vice Minister for Marine Affairs. Under them, the staff divisions were frequently reorganized to conform to various jurisdictional edicts. For example, shipbuilding was taken from them and placed under the navy but, in general, their responsibilities embraced matters of shipping, navigation, sea routes, channels, traffic, seamen's affairs, loading and stevedores' affairs, engineering, inspection, harbor lighting, passive protection of ships afloat and mobilization and allocation of shipping facilities. Administration and operation were decentralized to eight regional bureaus in whose operations the governors of the prefectures lying within each region had considerable voice. Through most of the war period, bureaus were located at Yokohama, Nagoya, Osaka, Kobe, Moji, Niigata, Enzau and Kotaru. The final organization had eight named bureaus with headquarters located as indicated below:

(1) Kanto Maritime Bureau—Yokohama.
(2) Tokai Maritime Bureau—Nagoya.
(3) Kinki Maritime Bureau—Osaka.
(4) Kyushu Maritime Bureau—Moji.
(5) Chukoku Maritime Bureau—Hiroshima.
(6) Shikoku Maritime Bureau—Takamatsu.
(7) Tokoku Maritime Bureau—Enzau.
(8) Hokkaido Maritime Bureau—Kotaru.

A map showing the division of Japan into local marine bureaus and also showing the location of the principal ports and harbors is shown on page 127.

b. *The district engineer* or local engineering branch office of the Minister of Home Affairs was responsible for the building and maintenance of harbor construction, for breakwaters, government piers, docks and wharves and government-owned harbor facilities and buildings, for the dredging of channels and the like.

c. *The prefectural governor* of the prefecture in which each harbor was located had considerable responsibility and authority in harbor and port affairs. He controlled nearly all of the funds and expenditures and administered locally most of the affairs of the Home Ministry, including police and security matters.

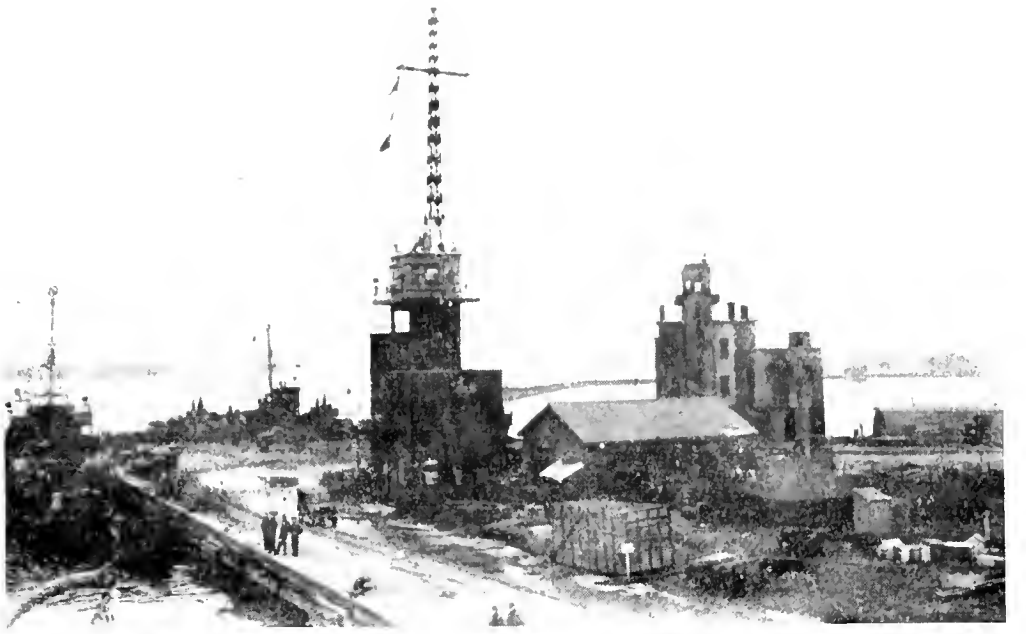
d. *The railroad bureau and communications board* both had many important installations in the harbor and water-front areas with heavy responsibilities for service and security.

e. *The municipal government* was responsible for its own property and facilities, such as municipally owned piers and warehouses, and also administered all matters concerning the welfare of the population, including sanitation and safety.

f. *The navy* was responsible for shipbuilding, safety of shipping and movement of vessels and convoys.

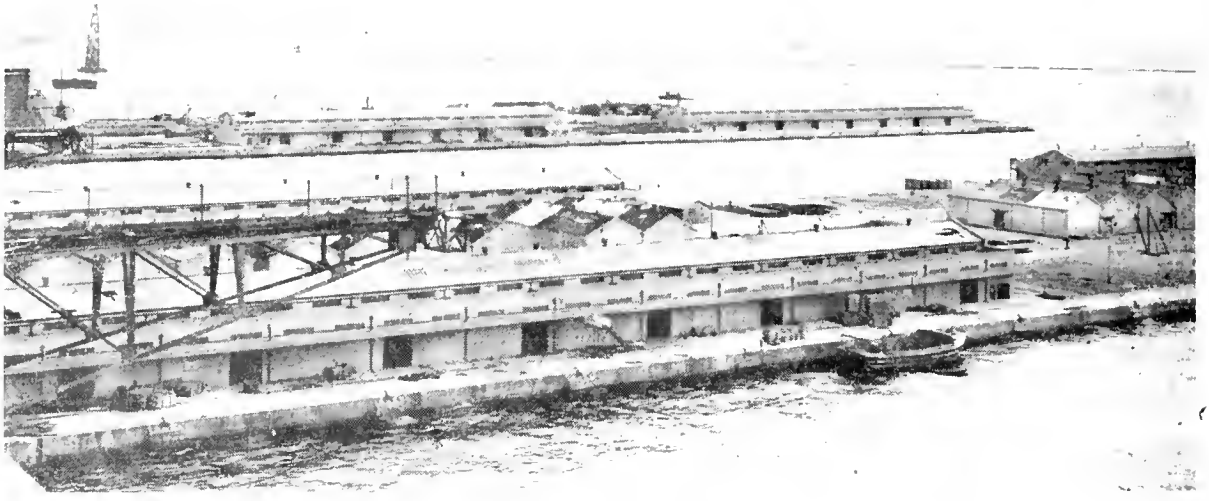
g. *Miscellaneous agencies* were created by private enterprises, government agencies, the army, and other organizations concerned with harbors and shipping.

3. *Organization for Air-Raid Protection and Port Security.* Each of the numerous agencies described above contributed something to air-defense planning. Lighting regulations were promulgated and enforced in part by three different agencies (navy, police, and harbor masters). Fire-fighting responsibilities were exercised by the



Water Police Headquarters, Tokyo.

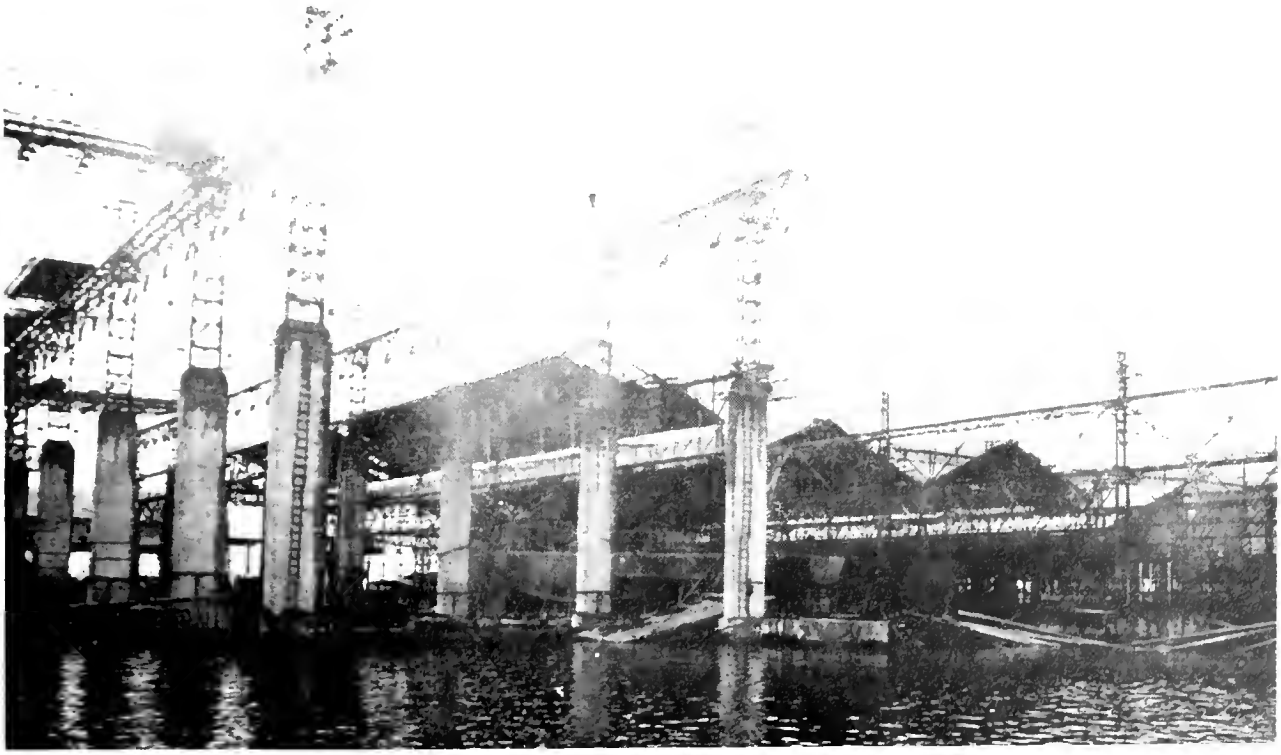
Typical concrete wharf, Tokyo.



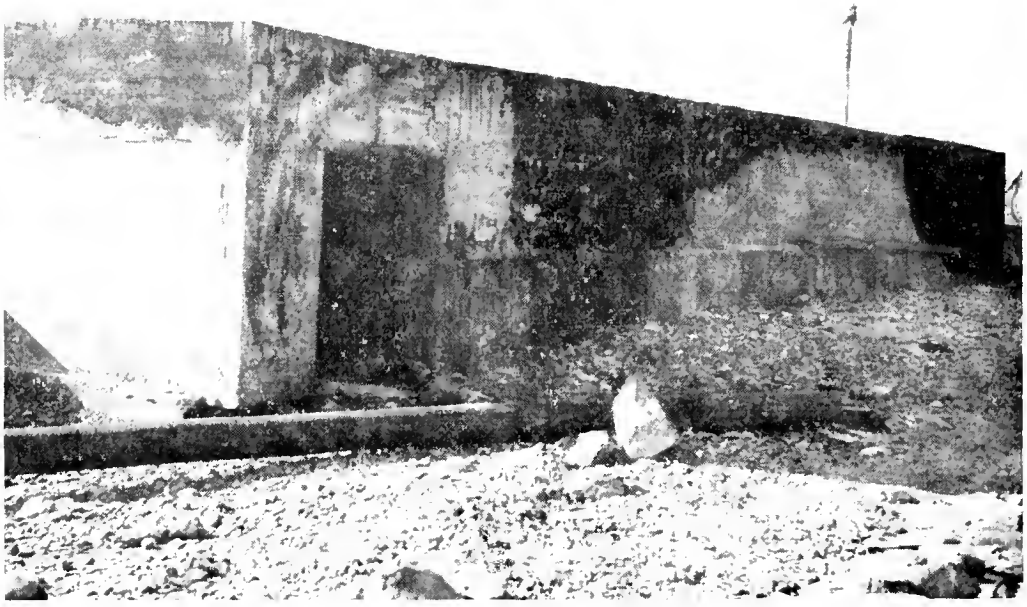
Steel and concrete piers, Kobe.

Typical pier, breakwater, Kobe (showing sunken ship in harbor).

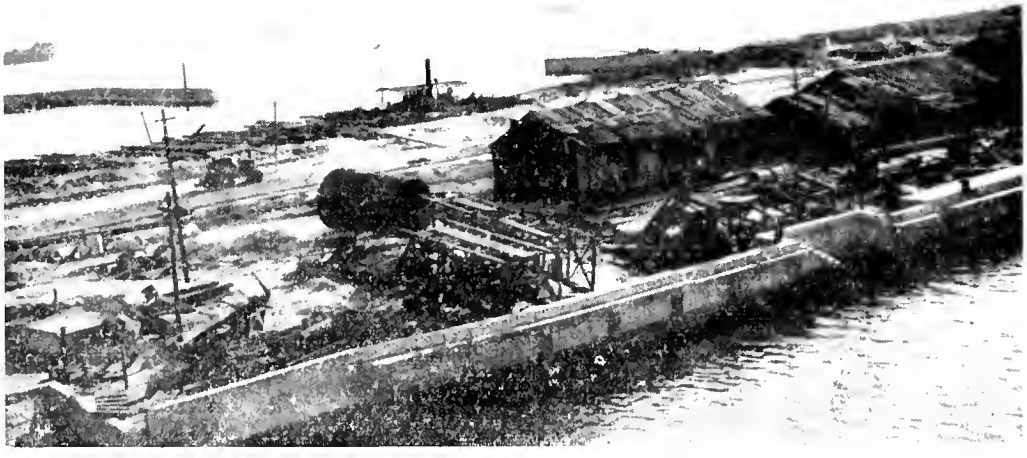
Typical shore installations. Docks and warehouses in foreground—shipbuilding yards in the distance.



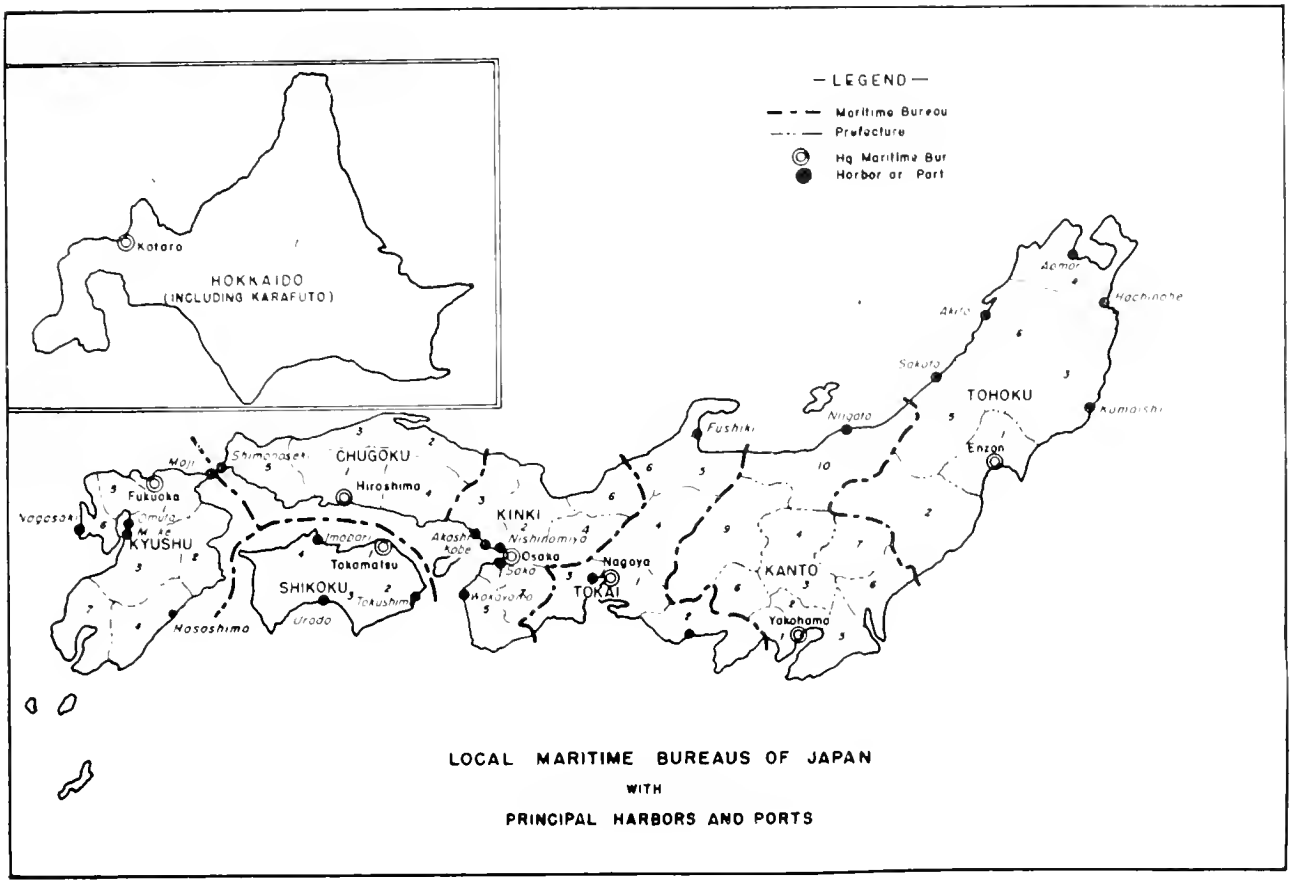
Shipbuilding ways, Osaka.



Air-raid shelter for water police (Osaka).



Concrete pier, Osaka. Anchorage in distance.



LOCAL MARITIME BUREAUS OF JAPAN
WITH
PRINCIPAL HARBORS AND PORTS

navy, by land and water police and by the fire departments. Most installations formed self-protection units of various kinds. Special auxiliary units came into being among boat owners, warehouse owners and water-front population. There was a minor scramble for air-raid-defense equipment, and a variety of training programs, drills and exercises ensued. This individual organization and uncoordinated effort resulted in much overlapping, waste of man power and disputes over authority until the National Air-Defense General Headquarters, in coordination with the ministries concerned, devised a plan for the air-raid defense of harbors and ports. This plan, issued as a regulation on 6 September 1943, formed the authoritative structure of harbor defense, employed the existing agencies and established leadership and control as follows:

a. *A harbor air-defense general headquarters* was established at each of the 17 most important harbor cities.

(1) The governor of the prefecture concerned was appointed director with the authority to appoint an executive assistant.

(2) Under the governor was a council consisting of the mayor, the director of the maritime bureau, the harbor master, the chief of the police department, chief of the fire department, the senior navy and army commanders, the president of the railroad bureau and representatives of industry and private enterprises.

b. *The operating departments* working under the general defense headquarters and subject to its command in defense matters consisted of most of the agencies formerly operating independently of each other but now reorganized along prescribed lines:

(1) *Water Police Department.* A regular department of the prefectural police system, equipped with police patrol boats, launches, tugs (and sometimes fire boats in harbors that did not have a regular water fire department). Its duties included the policing of the water portion of the harbor area and the landward portion immediately adjacent to the water, the regulation, training and supervision of auxiliary water forces, emergency water rescue, shelter regulation and the supervision of harbor personnel.

(2) *Water Fire Brigade.* Its duties were fire prevention, marine fire fighting and cooperation

with land forces in fighting fires on docks or in buildings adjacent to the water.

(3) *Auxiliary Water Police and Fire Units (Suijo Keibodan)*. These units were organized by the municipality and were trained for special water duty with the regular water police and fire units. Some were trained separately in auxiliary boats furnished by private interests in the harbor area. They specialized in water rescue, fire fighting, first aid and evacuation of the wounded.

(4) *Engineering branch of the Ministry of Home Affairs* was responsible for emergency repairs and the restoration of habor facilities, for salvage, demolition or the removal of sunken ships, for dragging and dredging.

(5) *Municipal harbor bureau* was charged with the protection, maintenance, and emergency restoration of municipal piers and other city property.

(6) *Municipal defense bureau* provided shelters. It went in for fire-resistant treatment and the improvement of fire equipment. It also made property arrangements for the creation of fire gaps and provided for emergency relief measures.

(7) *Marine bureau* was responsibile for dispersal of ships, maintenance of harbor communications, lighthouses and navigation lights, for enforcement of lighting regulations and for supervision of special self-protective units (Bogodan) on ships at dock and in installations on docks, piers and wharves.

(8) *Navy* was responsible for coordination and for necessary orders for protection of ships.

(9) *Railroad bureau* undertook emergency harbor-land transportation.

(10) *Special ministerial representatives* handled matters concerning materials, supply, labor, evacuation and welfare.

c. In some instances where harbors overlapped into two prefectures, such as was the case for Tokyo-Kawasaki-Kokohama-Yokosuka and for Kobe-Osaka, the prefectural governors controlled their own operating agencies, but the two air-defense general headquarters formed a joint planning board to coordinate their activities.

(4) *Operations.* a. Some appreciation of the extent to which the above organization was put to the test can be obtained by a review of the damage sustained by Japanese shipping and harbor and port facilities:

(1) The loss of shipping itself was an important factor in relation to shipbuilding, for the replacement program was conducted almost entirely in harbor areas and the protection of this industry was a responsibility of the 17 harbor air-defense general headquarters. Referring only to steel merchant cargo ships of over 100 gross tons, there were 2,736 of these in November 1941, an aggregate of 6,384,000 gross tonnage. At the end of the war there were only 900 such ships totalling 1,526,900 gross tons, even though in the same period ships totalling 3,973,200 gross tons had been built and placed in commission.

(2) A breakdown of the number of launchings of these new ships is significant: 161 in 1942; 318 in 1943; 657 in 1944; 152 in 1945. The 1945 figures show a sharply progressive falling off: January and February, 57; April and May, 34; July and August, 7.

(3) The damage inflicted in 26 harbors reached a total estimated at 176,020,000 yen.

(4) One thousand four hundred and six warehouses were destroyed. This represented over 52 percent of the warehouse space of the harbor areas struck.

(5) Sixty-six ships of over 500 gross tons and 679 of less than 500 gross tons were sunk in harbors.

(6) The other principal damage was to wharves, docks and piers.

b. Fire fighting in harbors and harbor areas was unquestionably the weakest link in air-raid defense because equipment was so poor. For example, the water fire department of the important port of Yokohama had possessed only one antiquated fireboat up to the end of 1944, and that one had only one 1,000-gallon-per-minute pumper. At that late date, 14 new ones were built but, prior to that time the department was dependent upon auxiliary fireboats owned by private companies in the harbor. When heavy raids struck, these private companies refused to respond because they were busy protecting their own property. The same condition existed to a slightly varying degree throughout the entire harbor system, and it became customary to remove immediately a burning ship to an unused part of the harbor, so that its ultimate sinking would not obstruct traffic. Even the eleventh hour construction of small new fireboats was limited to the Tokyo-Yokohama harbor area.

c. Fire-fighting forces on shore adopted a similar policy, that of abandoning a burning building to protect those surrounding it. A little more effort was made when a burning ship was tied to a dock. Land equipment was used and stevedores

were organized to assist with auxiliary portable equipment. Command was clearly defined between cooperating land and water fire-fighting forces. Originally, the bulkhead line formed the boundary but, later, if a burning ship were tied to a dock it came under the jurisdiction of the land forces.

d. The performance of the auxiliary forces cannot be categorically blamed for the breakdown of defense. Although poorly equipped, these forces generally responded well, mobilized quickly when the alarm was given, and followed their training procedures with discipline and courage. The exceptions to this rule were caused by a breakdown in leadership and by the stunning impact of saturation raids. Conflagrations often prevented mobilization by isolating the waterfront areas.

5. *Comments.* Failure of harbor air-raid defense was chiefly due to failures in national, prefectural and bureau level planning, coordination and foresight. It is true of harbor and port security that mid-war coordination of the multiple agencies was effected with a degree of success, but the procrastination was costly—there was no time to correct the errors and omissions of early planning. The technique of defense was based upon the early concepts of light-scattered raids and was adequately designed to meet even large numbers of simultaneous individual incidents. Saturation raids stunned officials and rank-and-file workers alike and induced a stolid feeling of hopelessness. The organization of personnel in harbor areas was not unsound; but their ability to function or reorganize was nullified by a failure to plan and provide the working tools—materials and equipment—with which to meet the increased tempo of aerial warfare. Althought it is believed that the organization and the efforts of the harbor air-raid-protection forces operated with about 20 percent efficiency, it is estimated that an ample supply of modern fire-fighting equipment would have reduced the damage by at least 50 percent.

E. AIR-RAID PROTECTION IN BUILDINGS DEVOTED TO PUBLIC USE

1. *Scope.* a. Air-raid protection in public building involved the organization of personnel into a unified group, the massing of available material, and the training of the group to perform a mission, namely, to eliminate or limit air-raid damage to material and personnel and thus to maintain maximum efficiency in the unit, whether it were a school, hotel, office building, apartment, hospital, public building, church, theater or retail store.

b. Public buildings were considered vital to the war economy and war effort because of their effect on public morale, comfort and welfare.

2. *Control and Responsibility.* a. Schools, churches, theaters, hotels, apartments, and office buildings were under the control of the Ministry of Home Affairs and were directed through the prefectures by the police.

b. Public schools received additional instructions from, and were under the control of, the Ministry of Education.

c. Public buildings did not have the close scrutiny from ministerial level nor the little assistance that went with the scrutiny; consequently their tenants had to rely heavily on their own resources.

d. The seriousness of the raids and their consequences did not become apparent until the latter part of the war. By that time, civilian defense materials and equipment were almost unobtainable. Government officials may not have been aware of the futility of the program started at such a late date, but they did shed responsibility by emphasizing the "self-protection" element, thus placing the onus of protection on individual units.

3. *Organization. a.* Organizations were formed about the able-bodied personnel of the establishments with the manager or president of the institution or building in question as the leader. These organizations usually included fire-fighting units, guard, medical and repair units with the greatest emphasis on the first.

b. Fire-fighting sections were always volunteer in character and were composed mainly of able-bodied male personnel who were without exception poorly trained by the police and fire department. Training usually involved the use of such crude equipment as buckets, beaters, ladders and hand-operated pumps. Infrequent drills were ordered by the leaders but, in most cases, neither training nor equipment was sufficient to cope with incidental fires, or fires resulting from spill-over raids.

c. Reactions of the self-defense organizations in privately owned buildings to police control and instruction varied between two extremes. In one instance a church and school institution appealed to the police authorities for instruction in

air-raid-defense measures, but no assistance was forthcoming. In another, the self-defense organization of an apartment building scorned help from the police and fire forces because, its members said, they lacked confidence in the policemen's or firemen's ability to impart instruction.

d. Guard sections were organized on both voluntary and permanent bases and acted as premises guards, fire assistants, aircraft spotters, guides and, in isolated cases, first-aid assistants. It was the usual policy to have a portion of the guard department remain on the premises at night.

e. Medical units varied according to the wealth and character of the buildings.

(1) Wealthy units had well equipped casualty stations complete even to sterilizers and equipment for all but major surgery and had a staff of doctors and nurses in attendance. On the average, however, equipment included a few bandages, a splint or two, a stretcher and antiseptics. Training of all but the professional class was poor and in many instances personnel was not even taught first aid.

(2) All public building units had made arrangements with local hospitals for service in emergencies.

f. Repair sections were either organized around the building maintenance department or repair was done by outside labor. The shortage of materials, however, precluded most such work.

4. *Water Supplies.* a. In all cases water was drawn from the city water systems, and pressures varied from zero to 60 pounds per square inch. This supply was supplemented by static water supplies stored in everything from swimming pools to barrels and buckets.

b. Even where static supplies were abundant, the lack of adequate pumping equipment precluded their effective use.

c. Certain office buildings had hose stations on each floor. If these were fed by a roof tank, they afforded sufficient capacity for normal accidental fires but, if tied into the city systems they were of little value because pressures invariably dropped to zero during raids.

d. None of the buildings in Japan had sufficient water capacity or equipment to protect itself against fires which might result from large-scale saturation raids. In many cases the Japanese realized this fact and merely went through the motions of organizing air-raid-protection units in order to stay within the law.

5. *Air-Raid-Warning Systems.* a. Initial air-raid warnings were given by city sirens, by telephone from the local police, and by criers from auxiliary police and fire units (Keibodan).

b. Interior warnings were given over the telephone, over public address systems, and by whistles, bells and criers.

6. *Protective Equipment.* a. Pumps varied from a 350-gallon-per-minute motorized truck unit to small hand-operated pumps of 20-gallon-per-minute capacity. In all cases, equipment was inadequate as to quantity and often as to quality. For example, most of the pumping equipment checked was inoperative, due to lack of proper maintenance.

b. Hose in the case of office buildings and hotels where inside storage was available was in good condition and varied from one inch to two and one-half inches, but in schools, hospitals and churches where it had been stored outside, it had deteriorated greatly and was often unusable.

c. Chemical equipment of acid, soda and carbon-tetrachloride types was in evidence but had usually deteriorated to such an extent as to be no longer of any use.

d. In no case was there an automatic sprinkler system in evidence.

e. Rudimentary equipment followed a general pattern and included buckets, beaters, hooks, ladders, mats, and sand. All of this equipment was of ancient origin and was of little value except for spill-overs involving but one fragment of a cluster.

f. Some attempt was made to create fire breaks, and these efforts met with some success. For a complete statement see the "Fire Protection" section of this report.

g. Medical equipment for first-aid treatment, when available, usually included stretchers, splints, bandages, salves and antiseptics.

h. Each building had casualty stations, usually nothing more than a gathering place in a centrally located, partly protected section of the facility, and everything was utilized from a rest room to an office desk or the manager's office. In general, these places had none but the most rudimentary equipment, and personnel had only scant knowledge of first aid. One exception to the latter was found in the schools: usually teachers had fairly adequate knowledge of first-aid measures.

i. Generally speaking, all public buildings had to rely on local facilities for major medical as-

sistance. For more complete information on this subject, see the "Emergency Medical Service" section of this report.

7. *Control Centers.* a. Control centers were improvised either in the basement or the manager's office. No special construction was undertaken to protect these installations.

b. These centers were usually equipped with telephones and, in rare instances, with public address systems. In general, information concerning incidents was handled by the manager.

c. Staff of these units always included the leader of the air-raid-protection groups, plus a few of his key men and squad leaders.

8. *Shelters.* a. Shelters were without exception inadequate as to quantity and quality. The best shelters were in the basements of office buildings. Large exterior shelters were made of wood and earth and, in many cases, were so weak that they constituted a hazard to those seeking refuge in them. None of the shelters was gas or fire proof.

b. The policy was to work or carry on normal duties during air "alerts," but to seek shelter during the "alarm." After the atomic bombs, people fled to the hills or took shelter at the first warning.

9. *Operations.* a. When large buildings were struck directly or were in the vicinity of full-scale saturation bombing, it was virtually impossible to prevent large-scale fire damage. In a few isolated instances, persons in stricken buildings or building groups were able to confine fire damage from spill-over hits with the limited fire-fighting equipment at their disposal.

b. Generally speaking, people were willing and fearless in emergencies but, without exception, equipment was too scarce to permit building personnel to do much against full-scale raids.

10. *Mutual Assistance.* Mutual assistance arrangements were made with the local neighborhood groups (Tonari Gumi), auxiliary police and fire units (Keibodan), and city fire departments, but often these units were too busy elsewhere to respond to calls for assistance.

11. *Light Control and Camouflage.* a. Light control in public buildings resolved itself into the use of blackout curtains or the extinguishing of lights where curtains were unavailable. The quality of light control measures varied as to locality: if the area had ever been bombed, people were eager to comply; if not, they were more complacent and did not bother too much about blackout procedures.

b. Little if any camouflage was practiced and what little there was, was limited due to shortage of paints and other materials.

12. *Comments.* a. Generally speaking, air-raid protection of buildings devoted to public use was ineffective, due to the appalling shortage of equipment.

b. The only strong point in the Japanese system was the people's desire to *try* no matter what the effort and no matter what the problem.

c. The more enlightened people in many cases saw the futility of attempting to cope with the situation and gave up. It may be said that after a few heavy raids the ignorant, too, gave up and, during later raids, there was a general exodus from stricken areas.

d. Community interest varied regarding protection of public buildings but, in general, the tendency was to look after one's own property and not to worry too much about the other man's. In the case of large corporate hotels or office buildings, lack of interest was replaced by actual antagonism. Neighborhood groups were willing to help one another and the schools, but were quite reluctant to leave their own areas to fight fires in public buildings, hotels or even in churches and temples.

VI. PASSIVE DEFENSE INSTALLATIONS AND PRECAUTIONS

A. PROTECTIVE LIGHTING

1. *Basic Regulations and Laws.* Fear of possible air attack from China or Siberia prompted the military to initiate and sponsor air-defense drills in Japan as early as 1928. In the thirties such drills were held once or twice a year in connection with army maneuvers. Public participation in these drills consisted largely of extinguishing lights, so much so that for years light control (Toka Kansei) and air defense (Boku) were practically synonymous in the public's mind. On 5 April 1937 the National Law of Civilian Air Defense (Law No. 47) was passed (Exhibit *C–1*). This law systematized the air-defense program, and light control was one of the authorized passive-defense measures. On 8 April 1938 the Ministry of Home Affairs issued the light control regulation, which was the enabling act, detailing how artificial lights should be controlled. These regulations remained in effect throughout the war

with only minor changes, but with stricter interpretation and enforcement as the war progressed. Preparatory light control (Jumbi Kansei) was made permanently effective by a decree issued 8 December 1941. High shipping losses due to submarines caused two decrees to be issued in the early part of 1943, one on 1 February, the second on 8 March, reducing lights which caused a sky glow visible from the sea. In January 1945 the Ministry of Home Affairs issued a decree suggesting the nightly application of "alert" light control (Keikai Kansei) rules each night after 2200. (This idea of the night application of the "alert" rules after 2200 hours and of complete blackout after midnight originated at the prefectural level as power conservation and war psychology measures. In many local governments it had been put into effect several months earlier.)

2. *Responsibility for Light Control.* The Ministry of Home Affairs was responsible for light control. This responsibility was discharged by the preparation, publication and distribution of the light control regulations and by the interpretation of these regulations directly to the public and through prefecture police, civilian defense organizations and by all possible means of propaganda (posters, bulletins, newspapers, movies, radio and word of mouth). The responsibility for enforcement of the regulations was passed on to the prefectural police who were assisted by various local civilian air-defense units, particularly the auxiliary police and fire units (Keibodan) and the neighborhood groups (Tonari Gumi).

3. *Premises for Light Control Regulations.* The details of the light control regulations were worked out to meet the following basic premises as specified by the military authorities:

a. That under "preparatory" conditions no enemy plane would ever come closer than around 93 miles (150 kilometers). (This was revised on 12 January 1945 to 31 miles (50 kilometers).)

b. That under "alert" conditions no enemy plane would ever come closer than approximately 3 miles (5 to 6 kilometers).

c. That under "alarm" conditions no enemy plane, even when overhead, would ever come closer than approximately 1,600 feet (500 meters).

4. *Details of Light Control Regulations.* The light control regulations were broken down into periods to correspond to the periods of air-raid warning. The details were worked out so that at the closest approach of an enemy aircraft the light permissible would not reveal its location to the aircraft. Since these regulations would be enforced by authorities without technical training, it was necessary that they be stated in simple, readily understandable language. They were worked out in very general terms, ("least possible amount of light," "lights to be invisible from outside the building,") with the opinion of the enforcing person the governing factor rather than any physical measurements. (In those relatively few cases where the regulations prescribed definite amounts of light no procedures for making the physical measurements were specified.)

a. *Preparatory Period.* Light reduction was aimed at decreasing sky glow. All advertising signs, unnecessary park, shrine, street and other exterior lights were to be eliminated and others were to be reduced in size and shielded to confine the light downward. A decree was issued 8 December 1941 putting this phase of light control into permanent effect for the duration of the war.

b. "*Alert*" *Period.* Lighting reduction was designed to have no lights visible at distances of three miles or more, and to accomplish this with a minimum interruption to vital activities. Exterior lighting was reduced drastically but with many of the more essential lights permitted (railroad signals, traffic lights, certain industrial lights). These, however, were to be adequately shielded to prevent the escape of light upward. Interior lights were to be shielded to prevent direct light from falling outside buildings. This type of light control was in effect for the duration of any air-raid "alert" signal. Late in the war it was made effective every night, even though there were no raids, from 2200 hours to midnight. "Alarm" light control rules were made effective from midnight until sunrise. This was put into effect as a conservation as well as a passive-defense measure.

c. "*Alarm*" *Period.* Lighting reduction was designed to have no lights visible to planes overhead even should they be as low as 1,600 feet. In order to have the minimum interruption to production the "alarm" period was divided into two phases. The first phase was when the "alarm" signal sounded. At that all windows and openings were blacked out (or lights within the building were extinguished), exterior lights were extinguished (except that certain essential industrial, railroad and traffic signal lighting was permitted, provided it was sufficiently reduced in

brightness and sufficiently shielded) and the amount of light in use indoors was reduced (a safety measure in case windows or the side of a building were blown out). The second phase was when the planes were directly overhead when practically all remaining lights were extinguished but, even then, certain dimmed railroad and traffic signals were kept in operation.

5. *Modification in the Light Control Program.* The light control regulations of 8 April 1938 were modified only by stricter interpretation and enforcement as the war progressed. This tightening was accomplished by decrees or directives issued by the Ministry of Home Affairs, and sometimes by the prefectural governments, usually at the prompting of the military. Important modifications were as follows:

a. A decree, 8 December 1941, put preparatory light control measures into effect every night from sunset to sunrise. (A time-table changing the hours of effectiveness was published twice a month.) Since at that time there was little fear of enemy plane raids, this should be viewed more as power conservation and a war psychology measure.

b. The idea of instituting "alert" light control rules every night after 2200 hours and "alarm" rules after 2400 hours seems to have originated in Nagasaki prefecture and, in a year's time, was adopted by many other prefectures as its advantage as a conservation and defensive measure became apparent.

d. On 12 January 1945 the Ministry of Home Affairs issued a memorandum to the prefectural governors cautioning against a too drastic interpretation of light control with its consequent needless hampering of production and normal activities of life. All of the factors involved in the light control program, that is, the necessity of wording the regulations in very general non-technical terms and the enforcement of these regulations by non-technical persons who were not responsible for sustained industrial production tended further to reduce the amount of light permitted. In preparing the regulations the engineer had to specify the minimum amounts of light and in the enforcement, since the generalities necessitated individual judgment, the individuals, to be safe, almost always leaned to the conservative side.

6. *Street Lighting.* Only in the cities did Japan have any street lighting, and most cities were served by three systems: the street railway system, the city system and the gate light system.

a. *The Street Railway System.* The street railway company or the railway department of the municipal government lighted the streets served by its car lines. The lighting units were generally enameled metal reflectors on bracket arms extending from the poles. Since this system was readily controllable from a few central locations, and since it covered the more important streets of the towns, only minor reductions in size of the lamps or in the number of units was made in December 1941. However, drastic cuts were made in the spring of 1943. But even then no special shielding was required since reducing the size of the lamps moved the light centers higher in the reflectors and provided the necessary upward shielding. In some localities reduction of illumination was accomplished by reducing the voltage on the lines at the source.

b. *The City System.* This was the municipal street lighting system. Either a department in the municipal government or the local public utility provided the equipment and lighted the main streets of the city not served by the street car company. Luminaries varied considerably, from the 200- or 300-watt decorative pedestal type in use along the boulevards and in the theatrical and shopping districts to the 40-watt steel-reflector bracket units used in the outlying areas. The decree of 8 December 1941 caused a drastic reduction in the number of units used in this lighting system (around 90 per cent) and a corresponding reduction in power. Shields were installed on some units. It is interesting to note that in this system, which was a multiple-lamp system, lighting reduction was accomplished almost exclusively by reducing the lamp size, not by reducing the voltage either at the source or at the lamp. Further tightening of the light control regulations in the spring of 1943 extinguished all pedestal-type units still in use (those at essential cross streets and intersections were replaced by bracket-arm deep-cone reflector units), and reduced the wattages of other types in service.

c. *Gate Lights.* Street illumination in the residential sections of Japanese cities was the responsibility of the residents of the area. It was customary for each house to provide a small light, usually a 25-watt lamp, in a semi-decorative luminaire, outside the gate or entrance to the house to illuminate the adjacent street. Parks and shrines were illuminated by similar gate lights provided in this case by the park department or by the reli-

gious organization (some parks were illuminated by decorative pedestal lantern-type units). The decree of 8 December 1941 extinguished all of these lights.

d. *Traffic Lights.* Early in 1942 some localities reduced the size of the lamp in their traffic signal units (with a corresponding readjustment in the unit to secure proper filament position) and installed shields to permit the units to be used during raids. Other localities, not making these changes, took steps to extinguish traffic signal lights upon the sounding of the "alert."

e. *Advertising and Display Lighting.* Many advertising signs were extinguished in 1940 as a power conservation measure and the remainder were extinguished by the decree of 8 December 1941.

7. *Vehicles.* a. *Automobiles.* Automobiles permitted to move during danger periods (only emergency vehicles could move during a raid) had to extinguish their lights completely or, if that was not practical, had to have the normal brightness of the lights drastically reduced through the use of a series resister and a black cloth as a cover over them. Although a definite degree of permissible illumination from headlights was specified in the regulations, no enforcing agency was equipped to measure, and the opinion of the enforcing officer ruled.

b. *Street Cars.* Headlights and interior lights of all electric vehicles had resisters installed in series so that lighting levels could be reduced drastically. Transoms were made opaque and windows were equipped with blackout shades. In congested metropolitan areas all electric street cars and interurban cars and trains were required to stop upon the sounding of the "alert" so that the sparking of the trolley on the wire would not reveal the target. Cars outside of congested areas could move up to the time of the actual raids and cars and trains out in the country frequently continued to move even with enemy planes overhead.

c. *Trains.* In the railroad section of the lighting regulations an elaborate set of limiting values on visibility and shielding was published covering signal lights (they could operate continuously when adequately shielded and reduced in brightness by from 20 to 50 percent), hand lights, headlights, inside lights, switching and similar lights. Railroads were encouraged to operate as much as possible, and most trains ran continuously out in the open country, at reduced speeds, even during the worst raids. Within city limits, trains were stopped so that flames from steam engines or sparking from electrical contacts would not reveal the target.

8. *Harbors and Ships.* In December 1941 almost all lighthouses and marker lights in outer harbors were extinguished as were all unnecessary lights around the docks and shipyards. Marker and other lights in the inner harbor that were not extinguished were dimmed so as to be visible for not more than 545 yards (500 meters) and were shielded to be invisible from above. The lights remaining in use were all electric, controllable from some central point, and they were extinguished upon the sounding of the "alarm." Ships were to reduce the brightness of their position and signal lights and to black out all interior lights under "alert" conditions and to extinguish all lights under "alarm" conditions.

9. *Factories.* Light control regulations for factories were designed to provide some safety coupled with a minimum interruption to production. Low values of exterior illumination were allowed for some work up to the last few minutes before the planes actually arrived. Blackout curtains, opaque windows, light shields and similar devices were suggested as a means of blacking out interior lights. Many factories neglected to provide themselves with such devices early in the war and by the time major raiding started there was such a shortage of materials that only the most essential industries could secure them, and many factories were forced to suspend operations at night whenever the "alert" was sounded. Certain other factories having industrial flames (blast furnaces, oil refineries, by-product coke ovens) also had to suspend operations at the sounding of the "alert" signal to give these fires or hot metals time to cool down so that they would not be revealing targets. Considerable study and experimental work was carried on to find successful means of hiding industrial flames, so that these factories could operate longer. Bamboo screens were found to be too fragile. Opaque shields were used around some steel furnaces but they confined the heat and created almost unbearable working conditions.

10. *Light Control in Homes, Stores, Offices and Public Buildings.* Due to the practice air-raid-defense drills and the propaganda drives many homes, offices, schools and public buildings had installed blackout curtains as early as 1939. Almost all such buildings were equipped with them by the spring of 1942. The antisubmarine

decrees in the spring of 1943, coupled with strong propaganda drives, forced a reduction in the amount of light used in buildings and also forced the installation of shields to prevent direct light from striking the windows and hence illuminating the outside. There were very few ready-made light shield devices or blackout curtains available for purchase. The methods of accomplishing the shielding and suggested materials to use were widely publicized and each household or building owner was expected to make shields for his own lighting needs.

11. *Contributions of the Light Control Program to:*

a. *Japanese Urban Air Defense.* The light control program contributed two things to Japanese urban air defense: first, an excellent propaganda means for uniting the country and, second, a passive-defense measure. Because no one could escape air-raid drills or the impact of the "preparatory" light control measures instituted immediately after Pearl Harbor, it was a powerful means of making people war conscious, yet its inconveniences were not sufficiently serious to have an adverse effect on public morale. Blackout has been accepted by military authorities as a passive-defense measure against pin-point air attack, and the Japanese program with its very minimum use of artificial light was excellent in providing it.

b. *Power Conservation.* Power conservation and propaganda seem to have been the two principal reasons for the institution of the "preparatory" light control measures in December 1941, since military authorities had little real fear of attack by enemy planes. The reduction in street lighting and the elimination of all advertising signs freed many kilowatt hours for industrial production. Power conservation may not have been so important a factor as others in later tightening of the light control regulations but each tightening resulted in additional power most welcome in the industrial field. Domestic power loads declined approximately 50 percent from 1939 to 1943. The institution of the nightly application of "alert" conditions after 2200 hours and "alarm" conditions after midnight was an important conservation as well as defensive measure. It saved power otherwise expended for lighting and, in addition, conserved man power by eliminating any night life. Contrary to expectations this nightly blackout did not increase the crime rate or the number of traffic accidents; however the reason for the latter was the almost complete absence of night street traffic. Since factories working on a 24-hour shift generally had two 12-hour shifts changing at 0700 and 1900 hours, this nightly blackout created no hardship.

c. *Feeling of Security Among Citizens.* The blackout definitely created a feeling of security among the Japanese people, in fact, so much so that the public stoned or otherwise extinguished signal markers and other lights intended to be left burning during raids. Lighting engineers probably could argue successfully that a less severe light control program would have permitted greater industrial production, more efficient traffic movements and greater public well being, but it is doubtful if it could have brought about as great a feeling of security as the Japanese achieved from the almost complete absence of light. Since a complete nightly blackout, such as was in effect in England and on the Continent, was not necessary in Japan, the light control program was not excessively depressing to the general public.

12. *Comments.* Considering all the factors originally confronting the Japanese authorities, the light control program as developed was technically excellent. It was based on the premise that only a few enemy planes would ever reach the homeland and that these planes would seek only the most vital targets. Successful working of the air-raid-warning system was assumed. Propaganda drives featured the making of blackout curtains and light shields out of scrap materals and stressed the use of wood, paper and cloth rather than that of the scarcer metals. The weak point of the system was the absence of technically trained lighting men who could understand a technical specification and who could properly evaluate lighting so as to permit its maximum use to secure efficient industrial production, yet still have the requisite safety. Because of the generalities necessary in the wording of the regulations and the reliance on the opinion of the local policeman, the tendency was for ultra-conservatism in the use of light. Because of this almost complete absence of light under "alert" and "alarm" conditions the American air force found Japanese targets well blacked out. If pin-point bombing, instead of blanket fire raids, had predominated, the blackout might have served its purpose effectively. It should not be overlooked in any study of the light control program of Japan that the Japanese standards of

artificial lighting have always been far below the standards in the United States. For example, the monthly power consumption in the average Japanese home was only around three kilowatt hours in 1938 and this declined to less than one and one-half kilowatt hours in 1944. This contrasted sharply with the 100 kilowatt hours used in the average American home. The levels of lighting in offices, stores, schools, factories and on streets were around one-tenth of those in use in the United States.

B. SHELTERS

1. *Introduction.* a. The Japanese national government at no time during the entire war period established a definite and clear-cut policy on providing shelter protection for the general public against incendiary and high-explosive bombs. At various stages a certain degree of interest was evidenced by the government through the issuance of pamphlets which set forth descriptions and specifications for the construction of certain types of shelters. In addition, directives were issued by the Ministry of Home Affairs to the prefectural governments advising that certain types of shelters be constructed, but the entire responsibility for such construction was placed upon the prefectures, municipalities and individual families, and it was not until June 1944 that the national government agreed to help defray part of the expenses for the construction of any type of public shelter. The reasons set forth for the failure to establish a strongly formulated shelter policy were:

b. The strong statement by the military that enemy planes would never be able to penetrate the defenses of the Japanese homeland.

c. The advocacy of shelter construction would (it was claimed) excite the people, lower morale, upset routine living and start a downward trend in war production.

d. The lack of materials, especially steel and cement, needed for construction of adequate bomb-proof shelters. In some official circles the belief was held that the scarcity of these materials was offset by the topography of Japan which in many areas lent itself to the construction of tunnel shelters in hills.

2. *Development of the Program.* a. As early as 1939 and 1940, the Ministry of Home Affairs prepared and issued through the Great Japan Air-Defense Association (Dai Nippon Boku Kyokai) handbooks of instructions for the construction of trench shelters as emergency shelters outside of homes. In succeeding years other pamphlets were issued which dealt with shelters in wooden and reinforced-concrete buildings and factories, covered trench shelters, home shelters and tunnel shelters. Instructions in all of these handbooks called for shelters to provide protection against near misses, but not direct hits, of high-explosive bombs ranging in weight from 100 to 500 pounds.

b. Some areas of the country had been directed in 1938 to build gas-proof shelters but investigations proved that not one such shelter for the use of the general public had been constructed in Japan.

c. The Ministry of Home Affairs in July 1942 issued the first directive on the construction of open-trench shelters. The first amendment in September 1943 ordered the construction of covered trench-type shelters. In October 1943 an amendment directed that each residence was to have a shelter dug beneath the house or in the yard or a near-by open area. In June 1944 another amendment called for the roofing over of all open-trench shelters and the construction of tunnel-type shelters in the sides of hills in accordance with plans and specifications set forth in pamphlets prepared by the Ministry of Home Affairs. Investigation showed, however, that local authorities had to make many adjustments and changes in construction to fit their own situations.

d. The responsibility for planning the construction and location of public shelters was usually vested in the planning and engineering sections of the prefectural governments. The police department, however, was the sole agency which could enforce the regulations affecting the shelter program.

e. The cost of constructing shelters was to be borne entirely by individual families, prefectural and local governments, businesses and factories. The only exception was in the building of tunnel-type shelters for which the national government was to reimburse the prefectural and local governments for two-thirds of the costs. But records of November 1945 prove that the national government had not paid any part of its obligations.

f. Based on a count of family, semi-public, public, factory, business, government, and all other types of shelters, claims were made that shelter space, temporary or permanent, was provided for every Japanese. However, the general construction of most of these shelters was so poor

that a study of the facts and figures clearly indicates that less than 2 percent of the total population was able to be accommodated in the tunnel-type shelters which were the only type offering possibilities of maximum protection.

3. *Types of Shelters.* a. *Family.* When families were first directed to construct some type of shelter, they simply dug holes 3 to 5 feet deep under their homes (Page 138) sufficiently large to accommodate the family and to hold some personal valuables. Shoring of the sidewalls was seldom done except in cases of extreme necessity. Early raids clearly demonstrated that this type of shelter was a death trap in the case of fire and building collapse, so that families were advised to prepare shelters in yard areas or adjacent open spaces. These were either semi-surface shelters about 6 feet square or trench shelters about 4 feet deep, 3 feet wide and 6 feet long. The sides of both were usually reinforced with 1-inch boards, and overhead protection consisted of ordinary 1-inch boards or corrugated ferrous sheets on which were placed about 1 to $1\frac{1}{2}$ feet of earth and loose stones. Officials and the rich often built more substantial shelters since they were in a position to secure materials and labor.

b. *Semipublic.* The basements of the more heavily constructed buildings were used both by employees and patrons who might be in the buildings when raids occurred. None of these basements was reinforced to withstand the blast of high-explosive bombs. These shelters were not usually available at night, except for personnel on duty, as the public was not out at night and the mass of persons lived some distance from the business districts. Another factor which militated against their use later was the loss of life in them from suffocation, something which occurred in a number of cities during the heavy incendiary raids of 1945.

c. *Public.* (1) *Uncovered and Covered Trench.* These types of shelter were about 8 to 12 feet long, 5 to 6 feet deep and about 3 feet wide, most of them having the sidewalls reinforced with light boards. The overhead covering consisted of light boards or corrugated ferrous sheets on which were placed 1 to 2 feet of dirt and loose stones. By 1945 practically all of the uncovered trench shelters had been made into the covered type. Each shelter had two entrances but no seating, light nor sanitary facilities. The capacity of each was from 10 to 20 persons. Some of these shelters were made by removing sections of the pavements parallel and contiguous to the

Shelter built under the flooring. Both entrances inside the house.

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Type of houses in which underfloor shelters were built.

curbing and often had exposed gas and water lines running through them, while others were constructed in fire breaks and any available open spaces. Until early 1945 these were in general the most adequate shelters provided for public use.

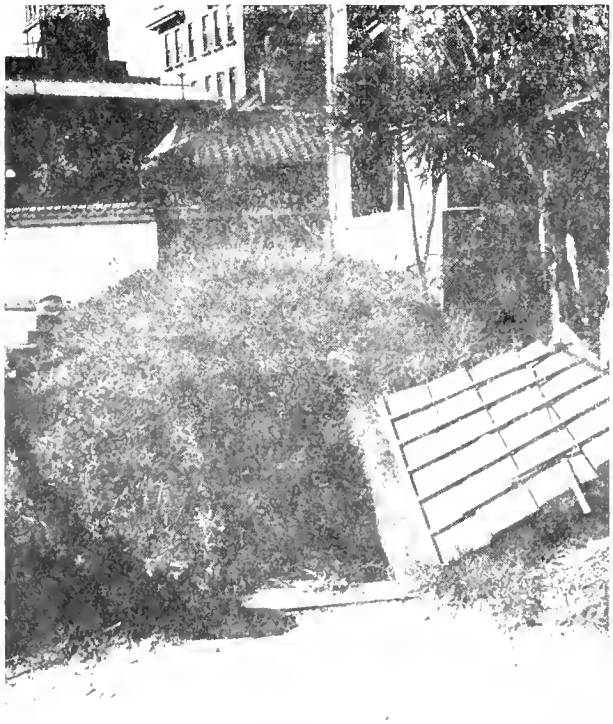
(2) *Concrete.* In some areas surface shelters were constructed on concrete building blocks with a single-block inner wall and a block-veneer outer wall, laid dry, with 3 feet of dirt between the walls. The ceiling had 4 by 4-inch beams with one-inch boards on top of the beams. The boards were covered by 1½ to 2 feet of dirt on top of which was a half-inch layer of cement. The capacity of these ranged from 18 to 24 persons. These shelters afforded protection only against fragmentation. In other areas concrete pipe was used to build both surface and underground shelters. Shelters constructed of steel and cement were very few in number due mainly to the scarcity of materials. Those of this type which were observed were built about 10 feet below the surface of the ground or into the sides of hills. All of the latter type had walls and ceilings 1 to 2 feet thick and floors about 8 to 10 inches thick. Most of them were equipped with mechanical ventilating systems, electricity, sanitary facilities and seating arrangements. The shelters were usually divided into several rooms and had a capacity of 200 to 600 persons. In general, the use of these shelters was limited to the sick, aged and children. The protective features of these reinforced-concrete shelters were far above those of any other Japanese shelters.

(3) *Tunnel.* Late in 1944, as stated above, the national government directed that tunnel shelters be constructed in the sides of hills and elevations within the limits of the cities. The topography of the cities of Japan lent itself readily to the development of such shelters, but construction was limited by the shortage of man power and equipment. These tunnels were built about 8 feet wide, 7 feet high, the length varying according to local conditions. The thickness of roof covering depended upon the location, but usually it ranged from 20 to 40 feet of earth, although in some places it was as much as 400 feet. Most of the entrances were protected by heavily constructed baffle walls. Many were reinforced with heavy timber but very few had flooring, seating, sanitary or lighting facilities. Quite often there was a network of intercommunicating tunnels which provided multiple entrances and exits and gave additional protection against blast. The tunnel shelters which had such a network afforded

Under-floor shelter after house had been burned. This is picture of one of those rare shelters which had entrances both inside and outside the house.

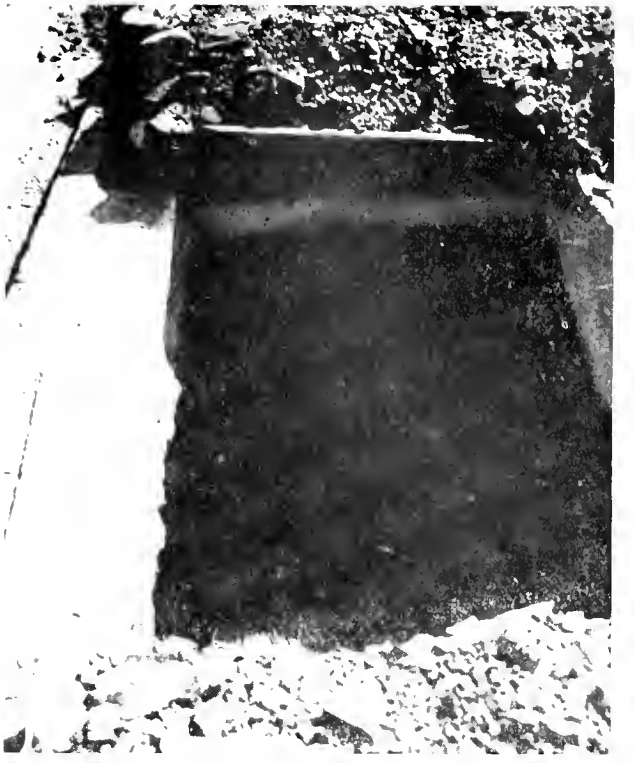
Picture of family semi-surface shelter built in an open area. Sidewalls braced with light timber. Overhead covering of corrugated ferrous sheets with about 1½ feet of loose dirt and stones on top.

Picture showing one entrance to a family shelter built by more wealthy classes. Concrete structure, 18 inches thick, with 5 feet of dirt covering concrete roof.



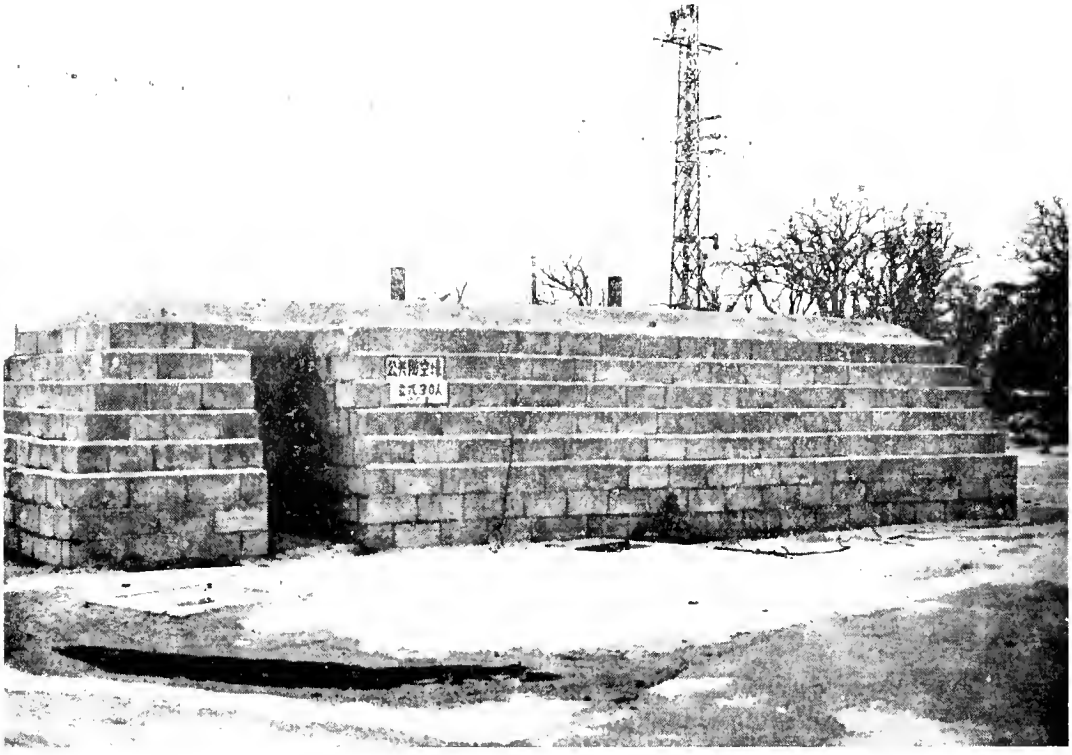
Picture showing undamaged covered-trench public shelter. This type usually had the sidewalls braced with 1-inch boards or other light timber and a covering of 1½ to 2 feet of dirt placed on corrugated ferrous sheets.

Picture showing open-trench public shelter dug along the sidewalk. The sidewalls of some of this type were braced with 1-inch boards or corrugated ferrous sheets.

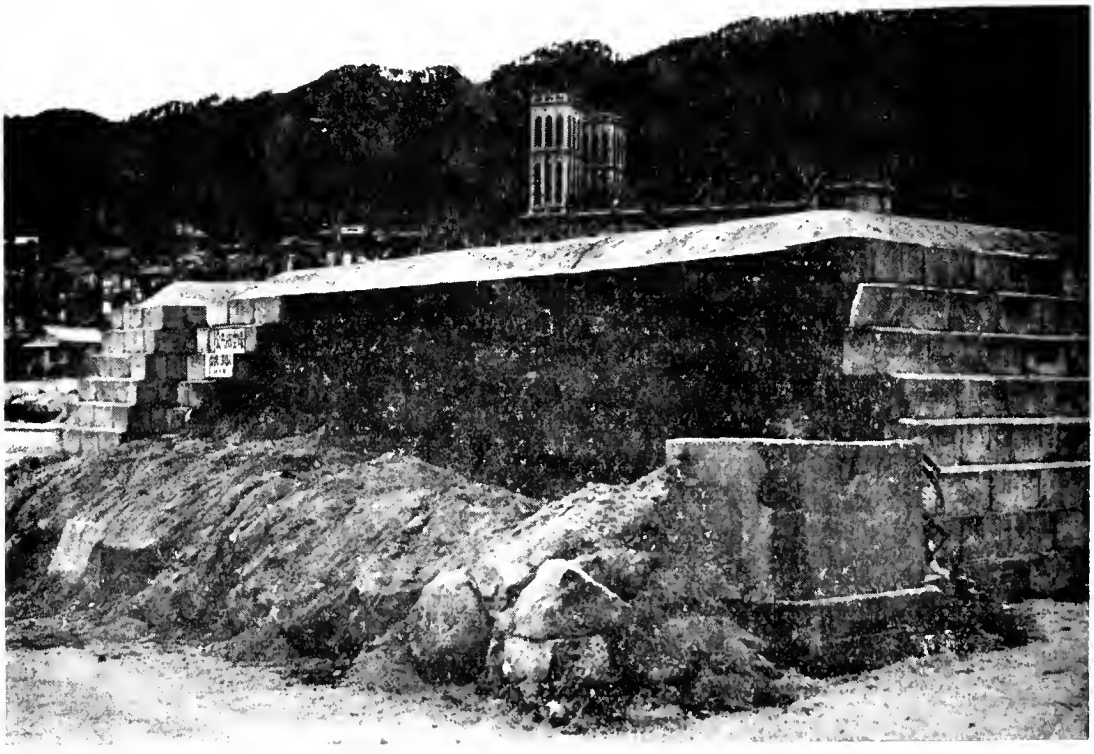


Picture showing exposed water pipe in public shelter constructed in the street along the curbing.

One entrance to concrete shelter constructed in the side of hill.



Public shelter built on the street. Concrete blocks are dirt filled. Two entrances. Capacity: 30 persons.



Damaged side of block-type shelter shown above. Note dirt between inside and outside walls and thin cement roof covering. Hollow concrete blocks were also dirt filled.

Tunnel-shaped concrete shelter showing one entrance, air vents, and white paint marking to distinguish the entrance in the dark. Concrete thickness approximately 30 inches. Capacity about 25 persons. Constructed for army personnel.

Public twin-type concrete pipe surface shelter. Capacity: 24 persons.

Entrance to underground concrete shelter constructed about 10 feet below the surface of the ground.

Concrete pipe underground shelter. Capacity: 50-60 persons.

Interior view of underground concrete shelter (entrance shown on preceding page). Door leads into room which housed mechanical ventilating system.

One entrance to concrete shelter constructed in the side of hill.

Another entrance to concrete shelter shown on preceding page.

excellent protection against blast from atomic bombs.

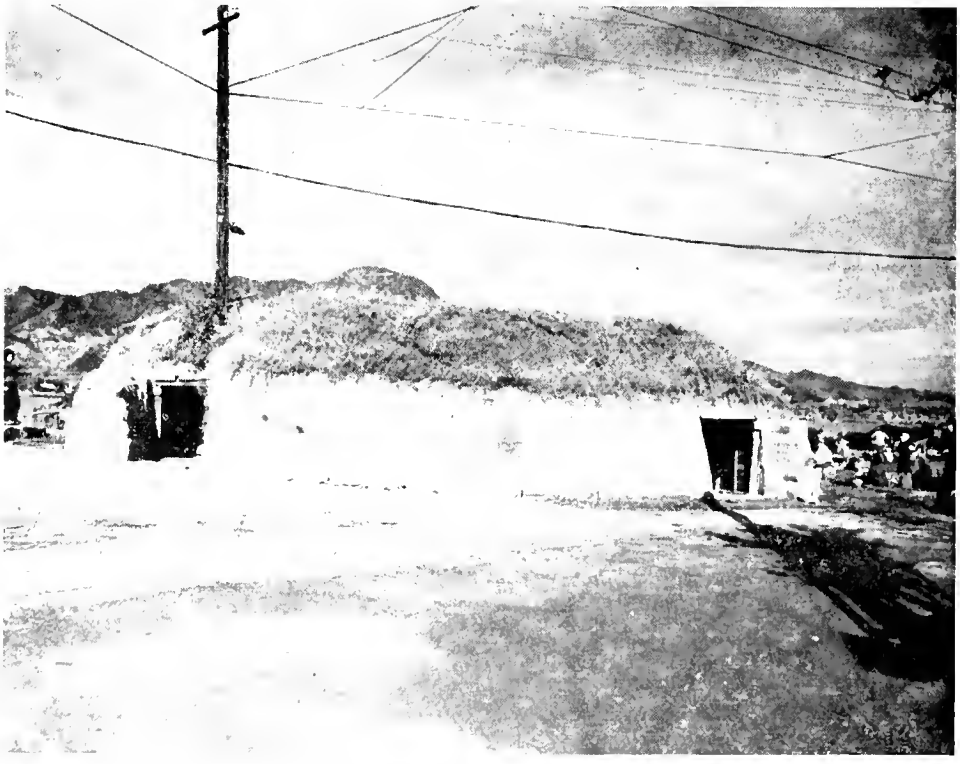
(4) *Subway Stations.* The stations of the subway railways were not used as shelters mainly because the sandy soil and water seepage prevented their construction to a depth whereby the overhead covering would afford ample protection against high-explosive bombs. The Ministry of Home Affairs, therefore, forbade their use as shelters.

4. *Special Purpose Shelters.* a. The military authorities because of their control over critical materials were enabled to construct much more adequate shelters for their personal use than were constructed for the public.

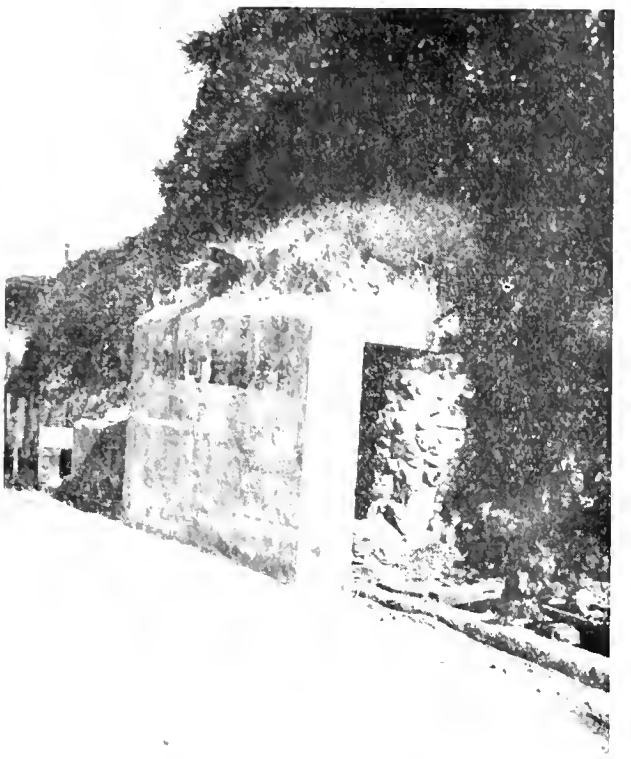
b. Railway authorities, because of their advantageous position, built shelters for their employees which generally afforded adequate protection against all but direct hits.

c. In only one of the areas studied was the control center given the protection of a concrete shelter built in the side of a hill.

d. Government agencies such as national communications and institutions such as hospitals, constructed concrete shelters which provided a



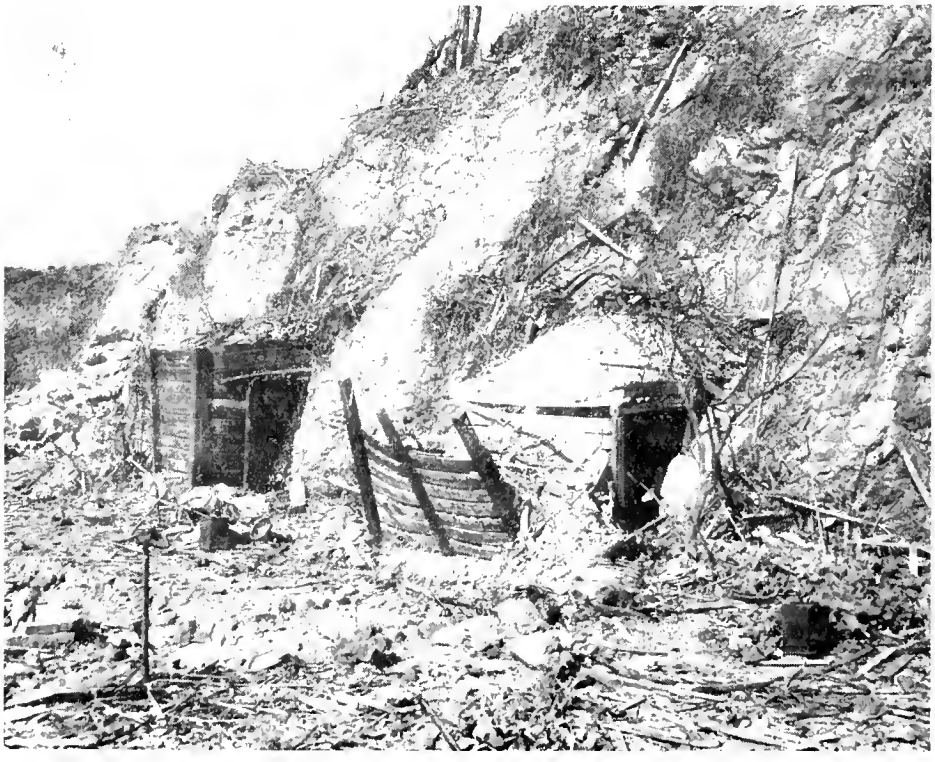
Concrete and heavy stone shelter of 3 to 4 feet thickness for use of naval personnel.



Concrete entrance and baffle wall to tunnel type shelter built into the side of a hill.

Baffle wall and entrance to tunnel-type shelter constructed in the side of a mountain.

Picture showing the entrance to a tunnel-type shelter dug into the side of a mountain. Structure and reinforcements are entirely of boards and tree branches.



Picture showing protected entrances to tunnel shelter with network of intercommunicating branches.

Type of shelter constructed for railroad employees.

Concrete shelter built under a terraced mountainside and used as a control center.

high degree of protection. (For detailed descriptions of these shelters, refer to the Medical and Communications sections of this report).

5. *Comments.* The development of an adequate shelter program for the general public of Japan was hindered by:

a. The position of the military authorities in claiming that no raids of saturation proportion would be made upon Japan. This led the planning authorities to believe it unnecessary to initiate a large-scale shelter program.

b. The extreme shortage of necessary materials, principally reinforcing steel and cement.

6. The effectiveness of Japanese shelters against various types of bombs used by the AAF might be summarized as follows:

a. *Against Incendiary Bombs.* The only shelters in Japan which gave protection against hits from such bombs were those located underground, constructed of concrete or concrete pipe, and tunnel shelters in the sides of hills. These shelters, however, did not protect their occupants against suffocation in the event of heavy fires for they were not provided with self-contained ventilating systems.

b. *Against High-Explosive Bombs.* Most of the tunnel shelters, especially those reinforced with heavy timber or concrete, generally afforded protection against bombs up to 500 pounds. Some of the tunnel shelters in the sides of mountains, depending upon the extent of the overhead covering, gave adequate protection against bombs of greater weight. Trench shelters, covered or uncovered, afforded a small measure of protection against blast and splinters.

c. *Against the Atomic Bomb.* Tunnel shelters in the sides of hills with branches at sharp angles extending from the main tunnel and with the entrances protected by well built baffle walls afforded excellent protection against blast and concussion, particularly so in the branches. Even those tunnels which were not reinforced in any manner and were located directly under the estimated center of impact of the atomic bomb did not collapse from the blast.

7. While the national policy called for some type of protection for every individual, as was evidenced by the order that every family must build a shelter, less than 2 percent of the population had access to shelters which afforded protection against bombs up to 500 pounds.

8. The value of the protection given by tunnel-type shelters was often offset by the distance the public had to travel to reach them, as many were constructed in park areas, shrines and at the outer edges of cities, which placed them at considerable distance from the densely populated areas.

9. There were very few underground shelters due to the shortage of necessary building materials, to sandy soil and to the high water level.

10. No gas-proof shelters for the public were constructed in Japan.

C. GAS PROTECTION SERVICE

1. *Introduction.* Full-dress air-raid maneuvers, including blackout and the use of gas masks, were held in Osaka as early as 5 July 1928. (Japan Weekly Chronicle of 5 July 1928 and Tokyo Times of 6 July 1928) and a picture from an unidentified newspaper in 1930 shows school children, both boys and girls, wearing gas masks in military drills. It will be noted that these preparations against possible attack considerably antedated the "China Incident" of 1937. It is strange, indeed, that so much expense and effort should have been devoted to a phantom enemy, unless it might have been for the purpose of conditioning the public for a war that was crystallizing in the minds of the military leaders. But whatever may have been the motives, it is a fact that a widespread popular interest in protection against poisonous gases was developed early. Information obtained in interviews with Japanese officials generally related the upswing of interest in gas defense to the "China Incident." Recalling the closing events of World War I, the Japanese authorities reasoned that a new war would start where the previous one left off, namely with the use of poison gas. But by what flight of imagination they conceived the idea that the Chinese, their only enemy at that time, could attack them with poison gas remains a mystery. The wave of enthusiasm for gas defense had reached its crest before the war with the United States, and, strangely enough, went into decline thereafter. The Japanese gave as a reason the fact that gas had not been used in the European war up to that time, and their conviction that the Americans would not resort to its use unless it was initiated by themselves. Moreover, in the later stages of the war, they felt that there would be no occasion for the Americans to resort to poison gas since the war was being won without this weapon. Despite these circumstances, the manufacture and distri-

bution of gas masks continued up to two or three months before the close of the war.

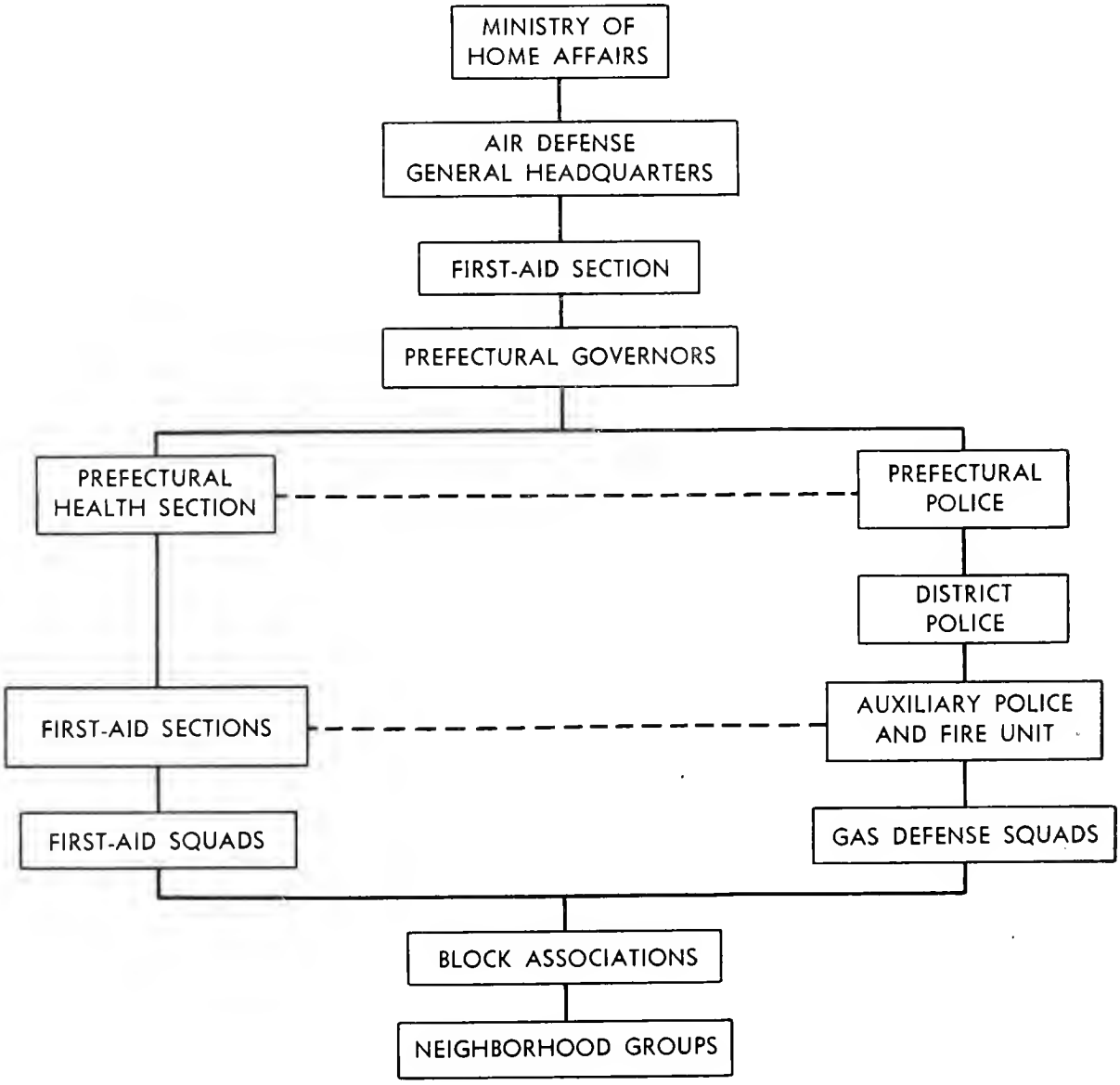
2. *Organization.* At the national level the gas-defense program was a branch of the first-aid section (Kyugo Ka) of the air-defense general headquarters (Dai Nippon Boku Sohombu) under the Ministry of Home Affairs. The Great Japan Air-Defense Association, a nonofficial and voluntary organization, was a factor of considerable importance at the national level. It was, however, a semi-governmental agency in the sense that it received some subsidy from the government. There was also a branch of this organization in each prefecture. Through it orders for gas masks and other anti-air-raid equipment were processed, and it sponsored the training for defense against all forms of air-raid hazards and compiled a manual of simple instructions for home use. In contrast with the Great Japan Air-Defense Association, the air-defense general headquarters was an official agency which promulgated and supervised the enforcement of directives. Locally, the gas-defense program was under the direction of the guard section of the prefectural police headquarters, and finally the district police stations. In each such district there was one or more auxiliary police and fire unit to which the gas-defense service was attached. In the earlier stages of the gas-defense plans, however, there was a tendency to connect this work with the health agencies. In at least one instance gas defense was originally a function of the health section (Eiseika) of the welfare department but was later transferred to the guard section (Keibika) of the police department (Keisatsu Bu) but, in all instances, close liaison was maintained between the police and health forces. It must be noted that air-defense plans were originally entrusted to local prefectural and municipal authorities. In the interest of greater uniformity and effectiveness a series of directives and ordinances from the central government in Tokyo, beginning in August 1939 and culminating on 26 November 1941, tightened up the air-defense program and placed the responsibility upon the ministers concerned with each phase of the work. Along with these changes gas defense became a fixed responsibility of the police offices. The organization varied somewhat in different localities, but the terminal unit was the gas-defense squad consisting of 5 to 10 men. In charge of each squad was a pharmacist with one or more assistants. (Organization Chart, Page 152.)

3. *Administration.* The gas-defense program in the prefecture was generally under the direction of a pharmacist attached to the police department. In the case of Tokyo, however, this position was occupied by a chemical engineer. There is little to report in the field of administration because the program at no time was called into active operation. Only at Kobe and Osaka was there a serious effort to set up an operative program. The maximum development consisted of the assembling and training of personnel, the equipment of the gas-defense squads with working materials, and the procurement and distribution of gas masks. These functions were regulated by the gas-defense officer in the prefectural police office who worked through the auxiliary police and fire units to carry out the training and equipment program and through the block and neighborhood leaders to provide gas masks for the general public.

4. *Gas Defense Training.* Each year in Tokyo an air-defense course lasting a week to 10 days was held under the auspices of the Great Japan Air-Defense Association, but instructors were furnished by the army and the Red Cross. One or more doctors were selected from each prefecture to attend these courses where all types of first aid, including gas defense, were taught. Upon returning to their respective prefectures, these doctors taught the appropriate organizational leaders what they had learned. These, in turn, passed on their knowledge to gas-defense officers, police officers and leaders of the auxiliary police and fire units. The instruction program was further extended to the block leaders and neighborhood group leaders by the gas-defense officers in the prefectural police office, and those leaders, in turn, carried it into the private homes. The instruction at the last-named level was for self-protection and concerned mostly the use of gas masks, but that given the auxiliary police and fire units was of a more technical nature, including the detection of poisonous gases and the methods of dealing with them. On 26 November 1941 the Ministry of Home Affairs published "A Handbook on Current Air Defense" (Jikyoku Boku Hikkei), the result of a joint study by several branches of the central government. This booklet was distributed to all families throughout the country, and served to supplement the verbal instructions of the various group leaders. Where the gas-defense program was poorly organized this booklet was perhaps the only instruction

GAS DEFENSE OF JAPAN

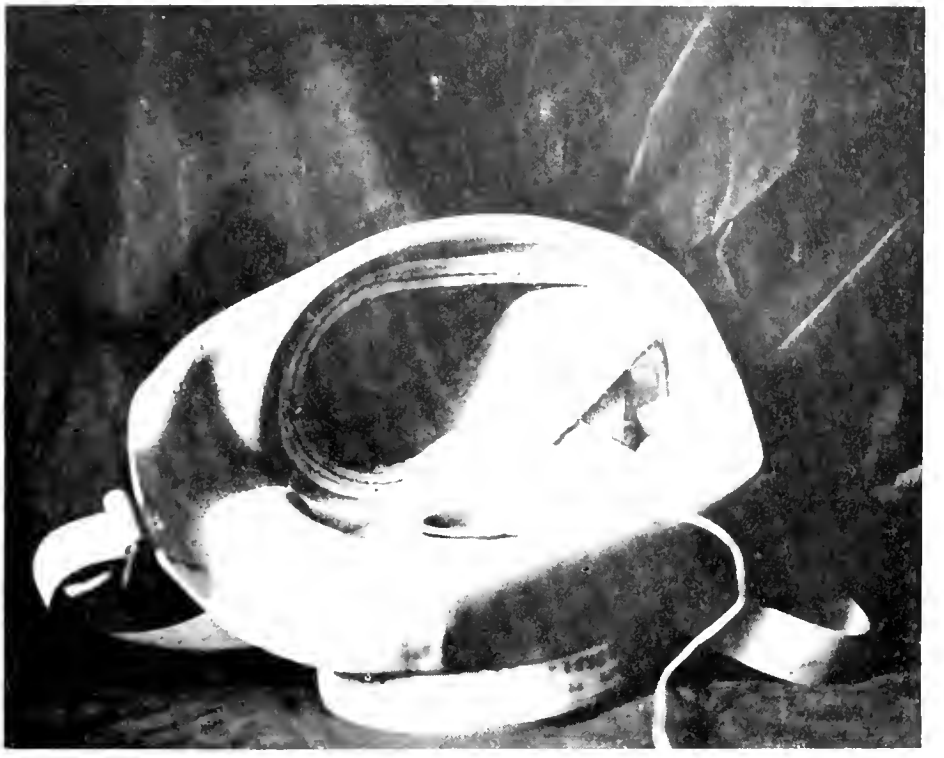
ORGANIZATION



the people received aside from articles appearing in the newspapers and addresses by radio.

5. *Gas-Defense Equipment.* No evidence was found in the central gas-defense headquarters (first-aid section of air-defense general headquarters, Ministry of Home Affairs) of any standard list of equipment having been specified or recommended for use by local authorities, nor were there any specifications or directives issued by the central headquarters with respect to the detection of poisonous gases or to methods of decontamination. In Kobe, however, there was found a local pamphlet which contained a list of items which each gas-defense squad should have, together with instructions regarding gas detection and methods of decontamination. Although some similar articles and instructions were found in other target areas, nowhere else were the plans so complete as in Kobe. On the following page is a list of materials specified in the Kobe pamphlet for each gas-defense squad. Pictures of the gas-detection kit, of three types of gas masks, and of a suit of protecting clothing are shown on Pages 153, 155, 156 and 157.

6. *Distribution and Use of Gas-Defense Equipment.* a. *For Gas-Defense Squads.* The list of articles was supposed to be acquired by each gas-defense squad at the expense of the members. All organized gas squads had some of these articles, but none of them possessed the complete list of equipment. Protective clothing was limited to members of gas-defense squads, and comparatively few of them possessed this equipment. In all only about 1,000 suits of gas-proof clothing were manufactured and distributed to gas-defense personnel. These suits consisted of rubber boots, rubber gloves and rubberized trousers, coat and hood, with a gas mask completing the ensemble. Gas-detection kits consisted of substances in glass tubes sealed at both ends and tipped with separate colors to indicate the type of gas for which each tube was designed—black for phosgene, white for lewisite, blue for acetophenone and red for mustard gas. To make the test the ends of the tube were broken off and to one end was applied a rubber bulb. Air drawn through the tube by the bulb carried an odor which was to indicate a specific gas. The gas under investigation was to be identified by comparison with the odors from the test kit. Thus



Simplest type of gas mask. Face piece and fittings all of rubber. Cartridge of detoxifying material attached directly to the mask. No device for draining of moisture from eyeshield and no exhaust valve.

he detection of gases was quite crude. There were no places for collecting gas samples and testing them in a laboratory.

a. Mechanical:

1.	Gas Masks—one for each worker	--
2.	Gas-proof clothing, including gas-proof gloves and shoes, sufficient to supply each worker	--
3.	Oxygen respirator	1
4.	Gas-detection kit	1
5.	Streamer (signal flag to show strength of wind)	1
6.	Wind flags (to indicate direction of wind)	3
7.	Sign boards for marking affected area	20
8.	Night sign boards	6
9.	Rope meters	500
10.	Wooden clapper (for warning)	2
11.	Thermometer	2
12.	Pocket flashlight	5
13.	Buckets	5
14.	Shovels	2
15.	Megaphones	2
16.	Tin-lined box for contaminated clothing	2
17.	Scraps of cloth (surgical dressings)	500
18.	Hand-drawn carts	2
19.	Bicycles with cargo carriers	2
20.	Trucks	2

b. Drugs:

1.	Sodium Carbonate lb.	1
2.	Sodium Bi-carbonate lbs.	2
3.	Potassium Permanganate lb.	1
4.	Caustic soda (sodium hydroxide) "	1
5.	Sodium thio-sulphate lbs.	3
6.	Magnesium peroxide lb.	1
7.	Kerosene oil liters	1.8
8.	Liquid paraffin lb.	1
9.	Alcohol "	1
10.	Refined cotton "	1
11.	Bandages rolls	2

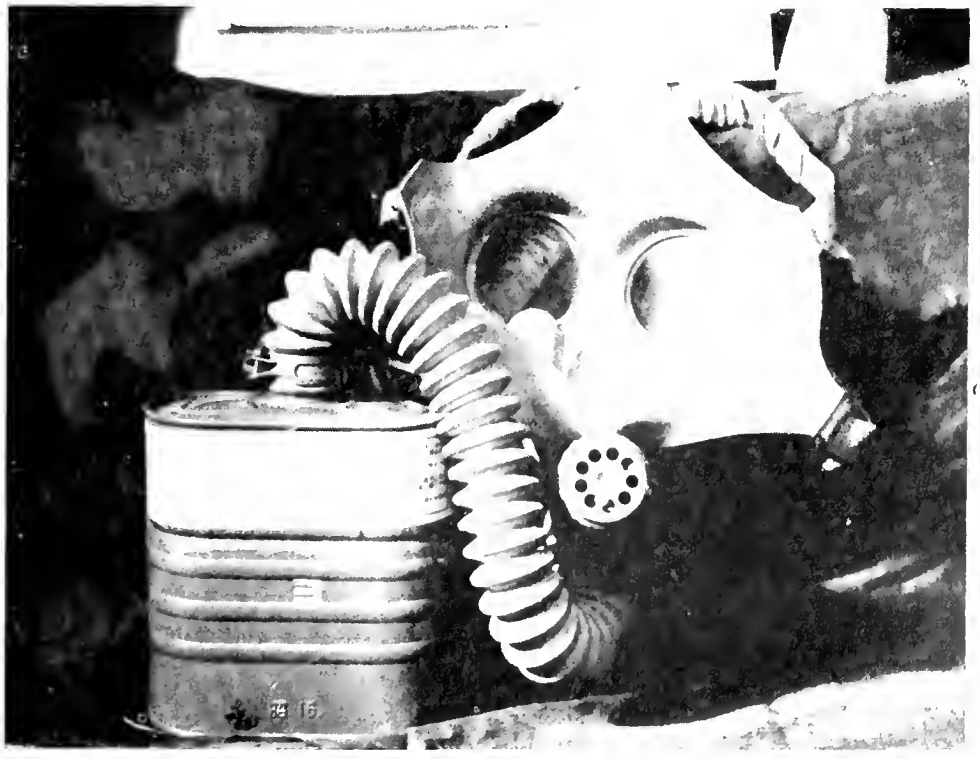
b. *Decontamination.* Plans for gas decontamination were also crude. In the case of gases causing skin irritation the victims were to be stripped of their clothing and bathed in a public bathhouse. The clothing was to be boiled or, in cases of severe contamination, it was to be immersed in a solution of calcium hypochlorite. In only one instance which will be described later was there discovered any attempt at specially designed decontamination facilities.

c. *Personal Protection.* (1) *Historical Background.* Gas masks played such an important role in the gas-defense program that they merit a separate account. It has already been noted that as early as July 1928 gas masks were prominently featured in air-defense maneuvers. Interest in procurement of gas masks by the general public was manifested as early as 1934 but large scale production did not begin until 1938. Although there was no immediate danger of gas, the people seemed to think that because the army had gas masks the civilian population should also have them. Their implicit faith in gas masks accounted in no small way for the general and progressive lack of interest in other measures for defense against poisonous gases. It is a strange commentary that, whereas there were no masks manufactured for the use of small children, a large warehouse was discovered in which large numbers of gas masks for horses were stored. No account of these was obtained in interviews, however, and no specimens were observed. As regards the children the only plan for their protection was to evacuate them to points outside the target areas.

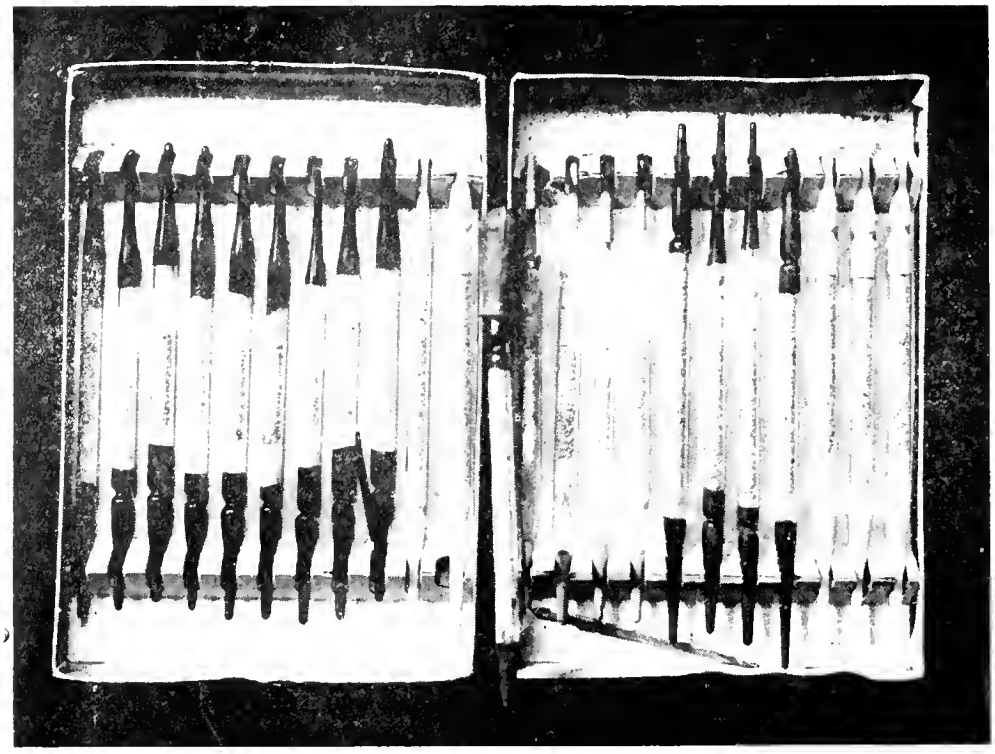
(2) *Production and Distribution.* In April 1940 the Ministry of Home Affairs made plans to equip each person in 26 major cities with a gas mask. The total population involved was 16,511,000 and the program was to be completed in March 1945. The actual number of masks manufactured for civilian use was 9,656,200 by the end of the war. Orders were received from the prefectures and distributed among 6 manufacturing plants. Shortage of material was at least one factor in failure to meet the established goal. While orders were never cut, there was sometimes a delay of 2 to 3 months in filling them. From the foregoing it is seen that well over 50 percent of the population in the greater cities of Japan had gas masks. Such a large coverage would seem to indicate an intense popular demand for them since most of them were paid for from private funds. Although this was true to a large extent, there was another factor that must be noted. At the insistence of the national government, manufacturers undertook the production of masks in accordance with the program above cited. While the general interest in gas defense was sagging, production continued, resulting in the accumulation of large stocks which had to be liquidated to prevent loss. Pressure was therefore put upon the local air-defense officials to sell these masks to the people, and quotas were set for each block association according to population. Prices varied from 3 to 18 yen, depending upon the model, but under the pressure sales the prices were marked down in accordance with the individual's ability to pay. In some instances the prefectural governments assumed a portion of the expense.

7. *Gas-Proof Structures.* Though there were apparently no plans for gas-prooling shelters and public buildings householders were advised to hang wet curtains at their windows and to spread newspapers on their floors. In Nagasaki, however, mention was made of gas-proof shelters which upon investigation proved to be nothing more than school basements with no openings except an entrance fitted with a steel door and a rubber gasket to seal the opening when the door was closed. Such an arrangement would not only exclude poison gas but would at the same time exclude air and was, therefore, hardly a practical solution of the problem. Only two gas-proof structures worthy of the name were found during the entire survey. One was an air-raid shelter at the Red Cross hospital in Osaka, designed for the accommodation of 100 persons. It was an underground structure with two entrances, one on each side. These were fitted with gas-proof steel doors, a foot-pedal-operated ventilating system by which outside air was drawn in through a filtering device to remove noxious gases, and by which foul air was discharged. The installation also included a room for decontamination of clothing by steam, a room fitted with 12 shower heads for bathing, an emergency operating room and flush toilet facilities. Light, water, and steam

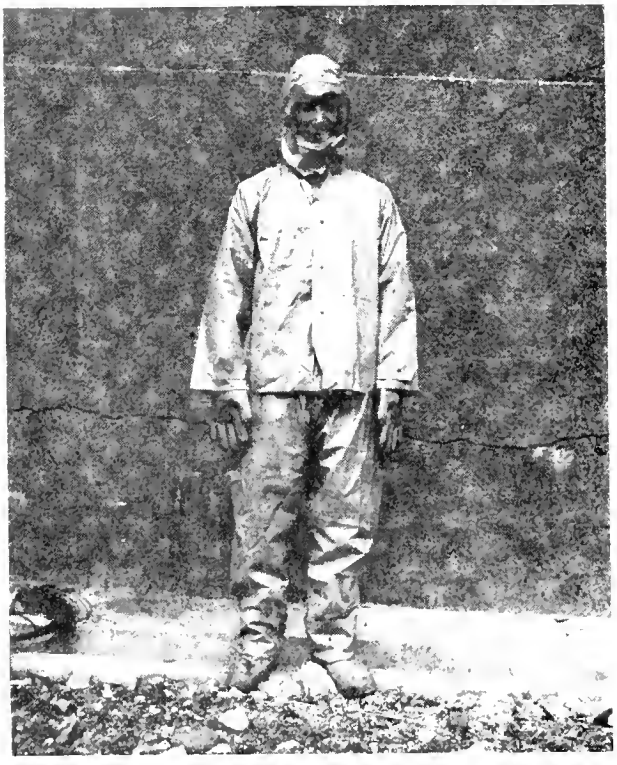
Intermediate type of mask. Face piece of rubber with individual eyeshields, recess for nose, and drainage devised to remove moisture from eyeshields. The fittings for attaching to head are adjustable fabric straps. Mask attached to detoxifying cartridge by means of a fixed tube. Note perforated disk which is a portion of the exhaust valve assembly.



Essentially the same type of mask as the one shown above except that the detoxifying cartridge is larger and is connected with the mask by means of a flexible, noncollapsible rubber tube about 18 inches in length.



Tubes of test material for crude detection of poisonous gases. The colors of the tube tips are not differentiated in the photograph, but are black, white, blue, and red.



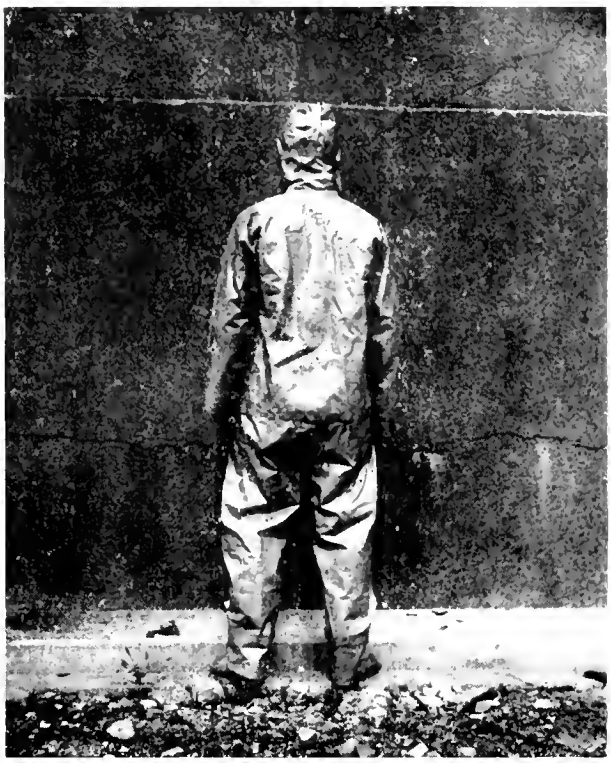
Front view of a suit of rubber clothing used for protection against poison gas. The material is a thin, nonchemically treated rubber, and could not have withstood rough usage.

were derived from the hospital system but the ventilating system was independent of outside power. There were also two oxygen cylinders in the main room for augmenting the oxygen supply in the shelter if necessary. The other was a much more complete and elaborate shelter for employees of the telephone branch of the Tokyo Communications Bureau, of which a detailed account will be found in paragraph 7 b (4) of the report on "National Communications Air-Raid Protection." Both this shelter and the one at the Red Cross hospital in Osaka were for special groups and were not open to the general public.

8. *Comments and Conclusion.* a. Although the idea of gas defense took an early hold upon the popular mind, the central organization for gas defense was quite immature and did not at any time exercise a decisive influence over the local gas-defense program except in the development and procurement of gas masks. On the local level there was, consequently, a great lack of uniformity as each prefecture was left virtually alone to develop its own gas-defense program. This lack of central leadership was reflected in the fact that some localities were almost devoid of a comprehensive gas-defense program and

placed sole reliance upon the use of gas masks. As the war progressed it became quite evident that the greater menace was from incendiary raids. For that reason such local gas-defense squads as had been organized and held in readiness for action were diverted to service with the first-aid units which were hard pressed and often overwhelmed by the enormous number of casualties from incendiary bombs. Had gas attacks been made upon Japan the people would have been without any effective protection other than that afforded by gas masks. The psychological value of the gas masks, however, was a factor in sustaining the morale of the people.

b. One phase of gas defense which was completely overlooked by the Japanese was that against gases and smoke resulting from fires. The German survey report indicated that a high percentage of the deaths from air raids were due to carbon monoxide and the suffocating gases in smoke. Undoubtedly the same was true in Japan where incendiary raids played the major role. The use of gas masks, which were so generally possessed by the public, might have enabled some people to escape from the ruins or survive in their shelters, especially if some oxygen supplying element had been incorporated in the mask. During the course of the surveys, however, there was no information obtained that would in any way suggest that gas masks were at any time used for protection against fire gases.



Rear view of suit of gas-protective clothing.

D. CAMOUFLAGE

1. *Basic Laws and Regulations.* Although civilian defense authorities considered camouflage as one of the "other measures necessary for air defense" and consequently covered by the National Law of Civilian Air Defense (Law No. 47) issued 5 April 1937, it was not until the law was revised in November 1941 (Law No. 91) that camouflage was specifically included as one of the civilian air-defense measures. In the meantime the Ministry of Home Affairs had prepared and issued in August of 1941 "Rules of Air-Defense Camouflage" which was the enabling act. These rules remained in effect unchanged throughout the war. Memoranda were issued by the Ministry of Home Affairs to the governors of the prefectures in 1942, shortly after the Doolittle raid, and again early in 1943 when the changing turn of the war increased the likelihood of raids by enemy planes, reminding them to make adequate use of camouflage as a protective measure. Although the Ministry of Home Affairs lost faith in the value of camouflage shortly after major raiding started and consequently issued no further order, military authorities in many districts exerted pressure on local prefecture governors and prompted the issuance of many local decrees, some as late as the spring of 1945. These decrees were instructions or orders to camouflage certain buildings in certain areas. In every case the camouflaging was to be worked out to meet the requirements of the "Rules of Air-Defense Camouflage."

2. *Responsibility for Camouflaging.* Along with other civilian air-defense measures, the Ministry of Home Affairs was the government bureau responsible for civilian air-defense camouflage. This responsibility was discharged by the preparation and publication of the "Rules of Air-Defense Camouflage" and its distribution to interested agencies. Since it was desired not to expend limited supplies of materials on needless camouflaging, this publication was classified as "secret" and distributed only to the prefectural governors who in turn handed it down to interested industrial companies, shipyards and railroads, and to police chiefs, heads of civilian de-

fense organizations and to the few consulting engineers specializing in civilian-air-defense camouflage. Certain phases of the program were published in magazine articles and bulletins put out by various agencies but, in general, camouflaging was to be done only for the larger and more prominent buildings. Responsibility for the use of camouflage was delegated to the prefectural governors who generally passed it on to a consulting civil engineer working with the prefectural police. This engineer selected the buildings, factories or localities which he believed needed camouflaging because of their size, prominence or location, and the owners were formally notified to undertake suitable camouflage. It was the responsibility of the owner to work out the details of the camouflage treatment and to have it meet the approval of the prefectural police. The government furnished copies of the "Rules for Air-Defense Camouflage" and the technical help of their camouflage specialist. The owners were responsible for the costs of the camouflaging but, if the approved camouflaging was unduly expensive, application could be made to the Ministry of Home Affairs for financial help from a special fund for that purpose.

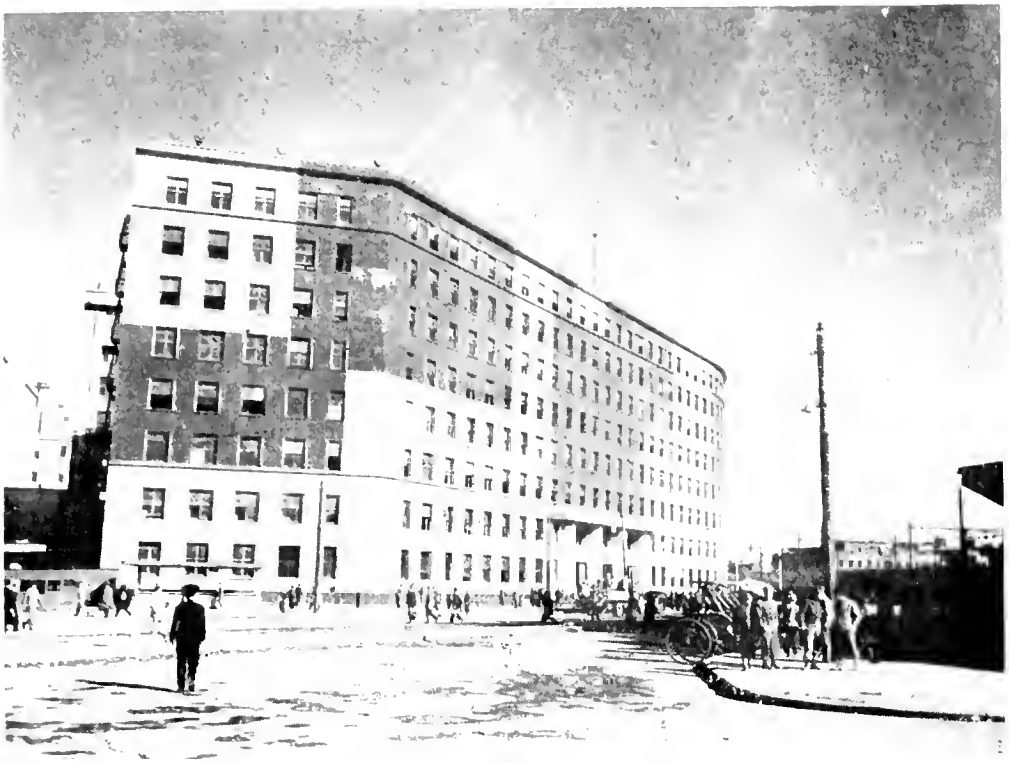
3. *Theory of Camouflaging.* Japanese camouflage suggestions worked out in the "Rules for Air-Defense Camouflage" were based on the expectation that any enemy air raids that did develop would consist of very few planes and that these planes would be seeking certain specific vital or important targets. The purpose of the camouflaging was to make these specific targets difficult to locate from a high flying plane (10,000 feet minimum altitude) by merging them into the background. Although the advantages of initially designing camouflage in buildings were recognized, the remoteness of air attacks did not promote civilian construction or interest in such construction until late in the war when lack of time and materials did not permit it. Stress was placed on the application of paint of suitable shade and configuration to merge the building into the background and of the use of screens or nets to hide targets that could not be protected by paints. These "Rules for Air-Defense Camouflage" were worked out in the summer of 1941 at a conference attended by military and civilian air-defense authorities as well as by leading members of the architectural profession, and represented their combined ideas. (At this conference, it is interesting to note, there was available no material or help from Germany or German sources.) The "Rules" were expressed in very general terms to permit the greatest flexibility in their application. Because no large raids were expected no ambitions program of creating dummy cities, of altering prominent terrain features or even of hiding areas by smoke screens was ever considered.

4. *Working out the Theory.* a. *Painting.* Most Japanese civilian installations which were camouflaged were painted. Mainly, they were large and prominent industrial, office and public buildings, and the purpose of the painting was to decrease their prominence by blending them into the darker surrounding background. The paint was frequently applied in patterns to simulate the prominent configurations of the surrounding country, block patterns for buildings located in towns where the roofs in residential areas showed up as blocks and rectangular patterns, and irregular patterns for the suburban areas where it was desired to imitate the irregular patterns of nature. At first, oil paints in dark green and dusty brown were used but by 1942 only black asphalt and to a lesser extent calcimine paints were available. Photographs on pages 159 to 161 illustrate typical building camouflage by painting. Since over-all coverage with black asphalt paint would make a building conspicuous, attempts were made to make it seem gray. The types of fine patterns developed to secure this grayness at a distance resulted in some weird effects and certainly made the building very conspicuous at close range.

b. *Screening.* The "Rules" advocated the use of bamboo lattice fishing nets as a means of screening targets. This type of camouflaging was used on some large public buildings (the readily recognizable dome of the Diet Building was hidden in this manner), and practically every large city hid its filtration ponds at the waterworks under a screen of fishing nets. The characteristic shapes of small oil tanks were frequently hidden with lattices of bamboo.

c. *Natural Camouflage.* The arrangement of tree shrubs and sod to achieve a natural camouflage was also advocated but little use was made of this method except around some air-raid shelters.

5. *Abandonment of Reliance on Camouflage.* Because it was intended and developed as a protection against raids of only a few planes, the authorities at the Ministry of Home Affairs

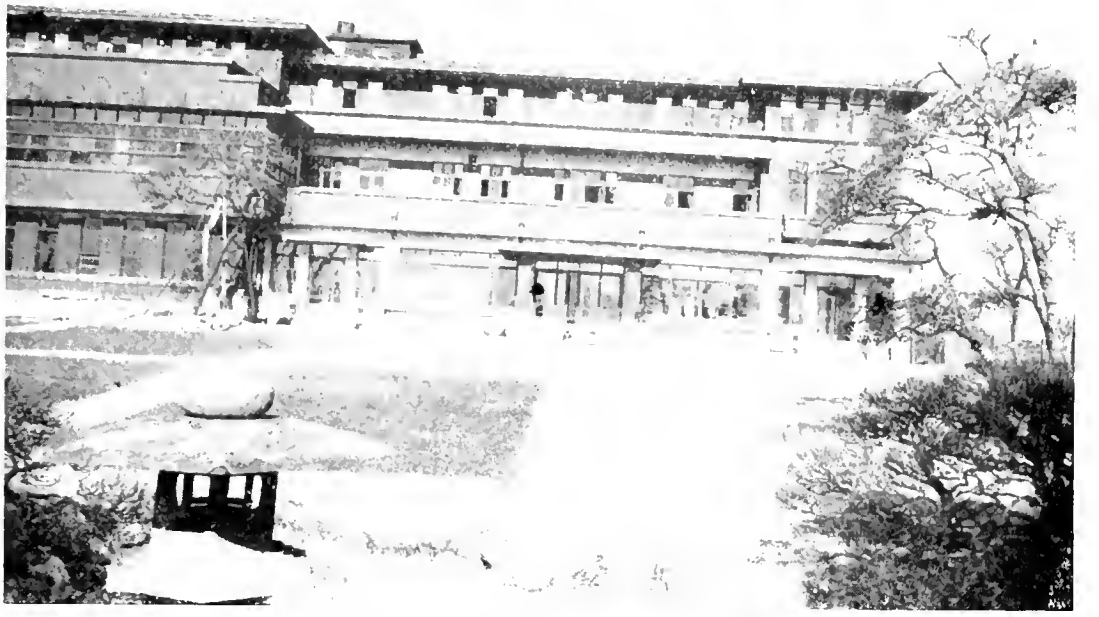


Railroad Office Building, Tokyo. Camouflage painting imitates the roof pattern of a group of smaller buildings.

Police station in outskirts of Tokyo. Camouflage pattern designed for confusion-motif of irregular street pattern near the building.

Camouflage treatment on chimney at University Hospital, Nagasaki. The pattern is intended to create an impression of greyness at a distance.

Camouflaged truck (irregular patterns in sombre red and green colors) standing in front of an office building having white glazed brick surface darkened by application of black asphalt paint. Kobe.



Navy Club (Kaigun Kurabu) Tokyo. Camouflaged by the application of black paint to hide the whiteness of the glazed brick finish.

Shirokane Primary School, Tokyo. Camouflaged by the application of black and dark green paint in patterns similar to patterns in neighborhood.

realized the futility of the camouflaging effort when mass raiding and area bombing began in 1944. By that time scarcity of materials prevented the development of any camouflage by means of dummy installations and the like, even if there had been time to build them. However, many local governments, sometimes at the prompting of the local military commander, continued to darken buildings to secure a camouflage even as late as the spring of 1945.

6. *Comments.* The study of Japanese camouflaging revealed some very interesting peculiarities of the Japanese mind not readily understandable to the Occidental. The Japanese would spend considerable time and effort hiding a lone small oil tank under a net of bamboo lattice when that tank would normally be quite inconspicuous from any distance, and completely ignore a large gas tank 300 feet away. They would erect an elaborate screening net over a filtration pond at the waterworks and neglect to take any steps to hide the typical curve of the vulnerable undefended dam of the adjacent reservoir. Considerable time was spent darkening the roof of the emperor's palace, yet nothing was done to conceal the large characteristic moat surrounding it. The Japanese neglected to take steps to hide large ship cranes or railroad yards as "it was not believed they were conspicuous from the air"; yet small buildings already partly hidden by a grove of trees were painted. A landmark, such as the castle in Osaka, was deliberately left exposed in the hope that it would be recognized as a "worthless" cultural monument and thus be spared to continue its function as an air-raid control center. The theory in this last case worked, however, as the castle was not damaged.

E. CONDUCT OF THE PUBLIC DURING A RAID

1. *Basic Laws and Regulations.* The basic authority governing the conduct of the public during air raids was the National Law of Civilian Air Defense (Law No. 47), issued 5 April 1937, and revisions to that law, one issued 25 November 1941 (Law No. 91) and the second issued 31 October 1943 (Law No. 104). Several ordinances and regulations giving details for the execution of these laws were issued, the original ordinance being dated 29 September 1937 (Ordinance No. 549) and the original regulation being issued in 1941 (Order No. 39). These national enactments were merely general directives to the prefectures requiring specific regulations at the prefectural level. Although they followed the same general pattern, rules varied in the several prefectures, local authorities frequently issuing decrees and directives altering the regulations to meet special or local conditions.

2. *Enforcement.* The enforcement of the air-raid-defense laws was the responsibility of the local prefectural government and, specifically, the prefectural police (except in Tokyo where it was the direct responsibility of the Metropolitan District Police who were directly under the Minister of Home Affairs). The police were assisted in this duty by the several civilian defense organizations, particularly the auxiliary police and fire units (Keibodan), the neighborhood groups (Tonari Gumi) and the self-protection units (Bogodan). These organizations instructed the public in civilian defense by all forms of propaganda (newspapers, posters, bulletins, moving pictures, talks, radio), by air-raid drills which were held at infrequent intervals as early as 1928 and by acting as guides during an actual raid.

3. *Planned Conduct.* a. *General.* The basic premise of plans for public conduct was to make maximum use of the principle of self-help to keep air-raid damage to the minimum and so to cause the minimum interruption to production. Persons least essential to defense were moved to shelters first, and all able-bodied persons were expected to support the program to the limit of their ability. The saving of material things was given high priority. Householders and the managers of factories, buildings and stores were charged with securing fire-fighting equipment and with having it checked at the first sounding of any air-raid-warning signals.

b. *Aged and Sick.* The aged, sick, pregnant women, small children and others not useful in self-defense activities were to move toward or into shelters shortly after the sounding of the "alert" signal. Just when they were to make this move varied with the time required for them to reach the shelters, the possibility of surprise raids and similar factors.

c. *Schools.* Most primary schools and kindergartens dismissed their pupils shortly after the sounding of the "alert." Children living near by were sent home to be with their families and to occupy the family shelters. Older school children, high school and college pupils were organized into self-defense units for the protection of

the schools and near-by property. Since these units did not need to go into operation early in the raids, many of these schools remained in session until the time the air-raid "alarm" sounded.

d. *Theaters, Stores, Restaurants and Places of Entertainment.* In some congested areas like Tokyo or Yokohama theaters, stores, restaurants and similar establishments started to close at the sounding of the "alert" signal, but in other localities, smaller and less vulnerable, customers were not dismissed until the air-raid "alarm" signal was sounded. Dismissed customers were expected to go home if they could or else to go to a public shelter.

e. *Offices.* Offices were generally not closed until the sounding of the air-raid "alarm" signal. If the office building itself was not designed as a shelter, near-by shelters to accommodate the workers were provided.

f. *Traffic.* (1) *Street.* Upon the sounding of the "alert" signal those not engaged in useful work went home, members of civilian defense units moved to their posts; elementary school children were dismissed; aged, sick, pregnant women and others not useful for defense activities moved toward shelters. This movement produced an immediate increase in pedestrian and vehicular traffic. All traffic was allowed to proceed except in congested metropolitan areas where it was felt necessary to stop street cars and electric trains at night so that the sparking of the trolley on the wire would not reveal a target area. There was a temporary increase in traffic immediately after the sounding of the "alarm" signal as people in offices, stores, schools and other units sought shelter. This traffic diminished rapidly as people reached their destinations or found temporary shelter (in the daytime street cars moved to some point where passengers could find shelter) and ceased by the time that planes were sighted. During the actual raid only emergency vehicles, fire trucks, ambulances and police cars were allowed to move.

(2) *Railroad.* In an effort to maintain sustained production, railroads were not only permitted but encouraged to operate throughout a raid, except in congested metropolitan areas where it was felt that the sparking of the trolley on the wire or the glow from the fire box of the steam locomotive might be dangerous. In practice it worked out that in the open country trains did continue to move during raids, though at a slow pace, but in suburban or urban areas they were stopped at the first station and passengers dismissed to seek the safety of nearby shelters.

(3) *Harbor.* The sounding of the "alert" was the signal for harbor shipping to disperse if in fleets; in no event to remain in a vulnerable channel. Defense stations were manned upon the sounding of the "alarm." Ferryboats were permitted to operate during the "alert" period and to continue during the "alarm" and to dismiss passengers to find shelter at the end of the run.

g. *Factories.* A large percentage of factories was equipped with blackout curtains and light shields, so that even at night many operated up to the time that planes were sighted and only then did workers lay down their tools to seek cover in the near-by shelters.

4. *Guiding the Public to Shelters.* The Japanese encouraged the construction of small shelters adjacent to factories and offices. Since their users knew where they were these shelters were not marked. Only in certain areas in the larger cities were a few of the shelters marked, and then there was no system regarding the type of sign used. Most were marked with a wooden sign crudely labeled "Air-Raid Shelter, Capacity — Persons." In the downtown areas of some of the larger cities police or members of one of the defense groups were stationed to guide strangers to the nearest shelters, but such measures were not considered necessary in the smaller communities. Entrances to public shelters were frequently marked with arrows of white paint or even white strips of cloth or paper. Luminous markers or illuminated signs such as were common in Germany were rare.

5. *Regulations Within the Shelters.* Little policing within the public shelters was found necessary, largely because of their small size. The first individual arriving at the shelter was supposed to be in charge and to admit more people until the shelter was full and to direct later arrivals to other shelters, but this duty was rarely assumed. Cleaning public shelters was the duty of the near-by neighborhood group.

6. *Variation in Planned Conduct.* It was intended by the Ministry of Home Affairs that the published regulations should be altered by the prefectural government when necessary to meet local needs. Many such changes were occasioned by local topographical conditions, local army regulations or public psychology. For example, since Nagasaki had been alerted frequently to aircraft headed for another target, it was decided

in the summer of 1944 to stop street traffic there for a 5- or 10-minute period after the "alarm," and then, if no raid developed, to resume it. Another variation, put into effect at Nagasaki as a further protection against surprise raids, was to require women, children, the sick and aged and others not essential to either the civilian defense or industrial production to move into shelters at the sounding of the "alert." In Tokyo, at the time of the big fire raids, people found greater safety in the canals and waterways, particularly under bridges, than in shelters. In Kobe, there was a marked variation in the actual conduct of the public from what had been planned, and this variation was due to the local topography. In the very first raids on that territory, workers learned that the slit-trench type of shelter adjacent to their factories was not safe. They also noted that the hillsides immediately behind the town were not being bombed. So they dropped their tools when the "alert" sounded so that they would have sufficient time to reach the hills before the planes arrived. The sounding of the "alert" signal in this area, therefore, caused an immediate drop in industrial production. The army did not issue air-raid warnings when enemy aircraft were identified as reconnaissance planes or were found to be few in number. If the "alert" or "alarm" had been given before the flight was clearly identified, the appropriate releasing signals were ordered. This is what happened at Hiroshima and at Nagasaki and accounts in part for some of the high loss of life. This policy was changed immediately after those experiences.

7. *Comments.* In general, the Japanese plan for the conduct of the public was well conceived and sound. It made good use of the principle of self-help and was flexible enough to be adapted to local conditions. However, it often failed to produce teamwork or the rapid dissemination of new ideas or techniques. There were marked variations in enforcement and in public preparedness, varying from false compliance in Kyoto (they were "sure that Kyoto would not be bombed") to desperate fear in Tokyo. One criticism of the planned conduct of the public that could be made of the entire civilian defense program is that, contrary to Occidental custom, a higher value was set on material things than on human life.

VII. EVACUATION AND WELFARE

A. EVACUATION

1. *Introduction.* a. The plan for civilian evacuation was based upon the assumption by the Japanese that AAF attacks on the homeland could not be delivered on any large scale or maintained for an extended period. Therefore it was assumed that the normal governmental administrative and transportation services, augmented for the requirements of the immediate emergency, could take care of any situation which might develop from attacks penetrating the army's air defenses. The plan called for the voluntary evacuation or dispersal of non-essential persons from cities to the homes of relatives and friends in the country as well as for the evacuation in groups of school children up to the sixth grade who were unable to leave with relatives. Although the evacuation of non-essential persons was voluntary, the Japanese had a mandatory plan for the demolition of houses (the Japanese refer to this as "evacuation of buildings") the purpose of which was to create open spaces around important installations the better to control and limit the extent of air-raid damage.

b. The Japanese considered evacuation an essential measure of city air-raid protection. On 21 December 1943 the cabinet decided to make the "principal cities strong air-defense cities," and issued to the governors of certain prefectures designated as evacuation areas advisory orders placing upon them the entire responsibility of evacuation.

c. The term "evacuee" as used designated that person who, as a precautionary measure, voluntarily left or moved away from the city to the home of a relative or friend in the country, whereas "refugee" or "sufferer" was one who became an air-raid victim or sufferer because of the loss of or damage to his home by an air attack or by demolition to create open spaces.

2. *National Policy on Evacuation.* The policy on evacuation was:

a. To move to relatives and friends in the country outside of specifically designated evacuation areas those persons who were not urgently needed in cities which had been designated as evacuation cities.

b. Insofar as possible, to move evacuees as family units.

c. To rely on the cooperation of the people to evacuate on a voluntary basis.

d. To evacuate important institutions. This pertains to the removal of schools, which is covered in paragraph 5, and the dispersal of factories, which is covered under "Factory Air-Raid Protection" in another section of this report.

e. To demolish houses (evacuation of buildings) to create fire breaks and fire lanes, in order to localize air-raid damage and thereby to protect important factories, buildings, transportation points, and to prevent the spread of fire in congested areas. This differed from the evacuation of persons inasmuch as it was a mandatory measure and the procedure depended upon the plan for the city as a whole. Paragraph 10 covers this subject insofar as it relates to persons made homeless by it.

f. To encourage voluntary evacuation by granting relocation subsidies to families of service men and families of those killed in action, as well as to those who paid taxes below a certain fixed amount or who paid no taxes at all.

3. *Evacuation Areas.* The four principal industrial districts on the two most important Japanese home islands (Honshu and Kyushu) and the major cities in those districts were designated as evacuation areas. Because of the importance of these cities to the war effort, they were also targets for the United States bombers and, therefore, maximum efforts were made in these areas to carry out the evacuation policies. All evacuation areas were designated as places to be avoided by evacuees when moving. The evacuation areas were:

Tokyo—Yokohama District:
Tokyo
Yokohama
Kawasaki
Yokosuka

Osaka—Kobe District:
Osaka
Kobe
Amagasaki

Nagoya District:
Nagoya

Northern Kyushu District:
Moji
Kokura
Tabata
Wakamatsu
Yawata

4. *Personnel Evacuated.* The precautionary evacuation of persons practiced in Japan differed somewhat from that in other countries in that efforts were directed toward having the evacuees themselves increase the war potential in the places to which they went rather than merely taking temporary refuge from a target area. Insofar as possible, evacuees went in family units to the homes of relatives and friends in the country. Many went to their ancestral homesteads in other parts of the empire far removed from the principal target areas. The entire country, other than the specifically designated evacuation areas, became one large reception area in which the evacuee himself selected his destination. Emphasis was placed upon precautionary or voluntary evacuation of persons not absolutely essential to the war effort or to the administration of the community. Such persons included:

a. Heads of households living in an evacuation area but who had their work in government offices, banks and business firms located elsewhere and who commuted to such work.

b. The temporarily unemployed.

c. Those living on annuities, pension, rentals, interest, allowances and the like.

d. Those with no fixed employment.

e. Those residing in the area solely for furthering their children's education.

f. Those who because of retirement or recent marriage were maintaining two households.

g. Those whose occupation did not necessitate their living in the area.

h. Children in the primary schools, second year and below.

i. Unweaned children and their mothers.

j. Pregnant women requiring the care of a midwife.

k. The aged, 65 years and up.

l. Those, irrespective of age, who were suffering from long illnesses.

m. Those who required nursing care because of deformities or chronic disease.

n. Attendants and nurses needed to take care of those in any of the above groups.

5. *Evacuation of School Children.* a. Predicated on the basis of "increasing the air defense," the Cabinet, in June of 1944, issued instructions to evacuate school children in the third to sixth grades, inclusive, of the national schools. Those pupils who were unable to evacuate with their parents were evacuated in groups upon the application of their parents or guardians. The

major part of this group-pupil evacuation extended over August and September 1944.

b. *School Reception Areas.* The reception areas for these pupils were selected upon recommendation of an advisory school committee, consisting of the principals of the more important schools, appointed by the governor of the prefecture in which the evacuation area was located. In general, the places selected were in small communities at some distance from potential target areas. This advisory committee maintained close liaison between the evacuation and reception areas on all matters such as housing, food, education and the like.

c. *Housing in the School Reception Areas.* The facilities used for housing were inns with extra rooms, temples, public meeting places, shrines, churches and similar structures where group living, play, worship and education could be continued under the same teachers the pupils had before moving. The pupils carried a minimum of baggage, bedding, cooking utensils and personal belongings. Ordinarily each group, depending upon its size, was accompanied by a small staff consisting of one or more teachers, a nurse, one or more cooks and two or three dormitory helpers. The food, fuel and other living necessities for the evacuee pupils were distributed through the Ministries of Agriculture and of Commerce upon transfer of the pupil ration cards from the evacuation area to the reception area. Particular attention was given to nutritional and medical care.

d. *Education.* Teachers accompanied the pupils from the evacuation areas and supervised all living conditions. They occupied the same quarters as the pupils. The school at the new location was considered as a branch of the city school from which the pupils originated and instruction was carried on as before but under the supervisory direction of the school authorities of the evacuation area. The evacuee groups were not superimposed upon the school system of the receiving community. Each existed as a separate unit, complete within itself. Each pupil within limitations was called upon to perform some labor in the fields to assist in maintaining the supply of food.

e. *Expenses at the Reception Area.* The parent or guardian of each pupil paid 66 cents (10 yen) per month toward the operation of the school and the living expenses of the pupils. The remainder of the cost was divided, 85 percent paid by the national treasury and 15 percent by the evacuating prefecture and municipality. Evacuee pupils were given priority transportation to the reception centers.

f. *Living Conditions at Reception Areas.* In late 1945 pupils at the reception centers were in good health and physical condition. They were divided into groups of 20 or 25 under the care and guidance of one teacher. A typical noonday meal consisted of a large bowl of rice mixed with beets and sweet potatoes, supplemented by a hot cup of soup. Efforts were made to supply daily 10- and 11-year-old pupils with from 12.6 to 17.2 ounces (358 to 488 grams) of food for the main meal. In addition to the food mentioned, other foods used were canned and fresh fish, salted salmon, butter, vegetables, pickled beets and the like. The food furnished was better in many cases than that available at home. The children were provided with long rubber boots, cotton underwear, raincoats and woolen clothing. Local doctors, assisted by student doctors and trained women, provided medical care. The school-day schedule started at 0600, called for about six hours of instruction, and closed with lights out at 1930. Parents were permitted to visit their children about once a month.

g. *Intensification of School Children Evacuation—16 March 1945.* Immediately following the heavy bombing attacks of early March 1945, the evacuation areas were divided into "A" and "B" sections. The evacuation of school children from the "A" sections became mandatory, while in the "B" sections is was still voluntary but strongly urged. All school children in the third to sixth grades were evacuated either with their relatives or in groups. In addition to this mandatory provision for the third to sixth grades, the first and second grade pupils in the "A" section were encouraged strongly to evacuate with relatives, and, when the parent or guardian made the request, they were included also in the group evacuation. This extra school evacuation occurred during the month of April 1945. At this same time emphasis was placed upon employing all group school children in farming, raising domestic animals and producing charcoal in return for which they received provisions, fuel and other necessities. The period of evacuation of school children was extended to the end of the school term in March 1946. With the cessation of hostilities in August 1945, many pupils returned, but indications were that the majority of those who had been evacua-

ted in groups would not be returned, because of the lack of adequate housing, until the end of the term (March 1946).

h. *School Children Evacuation Statistics.* The first major school children evacuation effort was during July and August 1944, before the large-scale bombing attacks on the main islands of Japan. At that time, pupils in the third to sixth grades were urged strongly to evacuate to places away from the target areas and approximately 53 percent of the August 1944 school population actually left the evacuation areas. Data for some of the larger cities follow:

School Children Evacuated—August 1944

City	In groups	With guardians	Pupil population	Percent evacuated
Tokyo	179,664	195,363	697,268	53.8
Yokohama	23,197	39,700	124,330	50.6
Kawasaki	6,360	15,131	38,924	55.2
Yokosuka	6,774	10,174	25,881	65.5
Nagoya	32,331	36,490	157,838	43.6
Osaka	67,938	117,743	328,372	56.5
Kobe	17,162	34,156	106,214	48.3
Amagasaki	3,922	10,560	24,811	58.7
Totals	337,348	459,320	1,503,638	53.0

After the heavy raids on the mainland islands in March 1945, school children evacuation was intensified. It became mandatory for the third through sixth grades to evacuate, and the children in the first and second were strongly urged to leave. These incentives are reflected in the substantial increase in the percentage of the school population evacuated as of April 1945, when it reached 87.2 percent. Data for the larger cities follow:

School Children Evacuated—April 1945

City	In groups	With guardians	Pupil population	Percent evacuated
Tokyo	203,420	416,771	717,149	86.5
Yokohama	31,900	61,283	111,172	83.8
Kawasaki	7,100	20,499	32,094	86.0
Yokosuka	8,740	10,174	27,847	67.9
Nagoya	39,380	53,361	105,755	87.7
Osaka	89,830	178,747	296,484	90.6
Kobe	26,810	49,972	80,370	95.5
Amagasaki	7,080	13,079	26,865	75.0
Totals	414,260	803,886	1,397,736	87.2

6. *Essential Personnel.* a. People who were essential to the war effort and who were not permitted to leave the cities were:

(1) Government officials.

(2) Watchers, auxiliary firemen and policemen, rescue personnel, construction workers, clearance personnel and members of school patriotic organizations.

(3) Workers in munition factories and offices, harbor, transportation and supply officials.

(4) Others specifically designated by the governor, fire and police chiefs, and the mayor of the city. The families of this personnel, however, were considered as refugees.

b. The saturation raids in the spring of 1945, brought about such an exodus that the government permitted only children, the non-essential, the sick and the aged to evacuate. This became necessary because personnel essential to air defense and production had been evacuating under the guise of evacuees or air-raid sufferers and because people in small towns had caught the evacuation scare from the cities and were running to safety. Again it was emphasized that the essential personnel, including government officials, medical officials and transportation staffs, must remain at their posts.

7. *Reception Areas.* Whereas the Germans designated specific areas for the reception of refugees from specific cities, the Japanese tended to regard the whole countryside as a reception area and urged refugees to go to their relatives no matter in what part of the country they might be. Evacuees were supposed to turn their energies to the increased production of war materials and food. No plan was developed, however, for the employment of those living on pensions or those with large incomes. They were expected to volunteer their services to the rural community. Former farmers who lived in cities were urged to return to farming. After an evacuee's destination had been determined, his ward office notified the prefectural office which, in turn, made arrangements for him to get his rations in the place to which he was going. The housing situation in all areas was critical and people in receiving areas were urged to offer vacant rooms to evacuees, and even to double up to make more room for them.

8. *Evacuation Aids and Subsidies.* a. *Evacuation—Consultation Offices.* Several evacuation consultation offices were set up in each evacuation area, the function of which was to advise, encourage and give guidance on all matters of evacuation. These offices were established generally at police headquarters, ward offices and city halls.

b. *Certificates for Changing Districts.* In order to maintain control over man power and also to allocate railroad space to those eligible for it, the government required evacuees to secure at

their ward leader's office a certificate authorizing their evacuation. Each applicant for evacuation filled out a questionnaire stating:

(1) Destination.

(2) Indicated date of moving.

(3) Number of persons in family, including sex, age, occupation and place of work of each.

(4) Residence, number of rooms, number of mats, condition of house, number of stories and whether owned or rented.

(5) Amount of taxes paid to the city.

(6) Services required to move, such as baggage transportation, whether by express, train, truck, or boat, packing materials needed.

(7) Occupation at new address, school to be used and plan for starting business.

These questionnaires were screened to make sure that no one essential to the war effort was moving out of the territory. Check on such matters was made by the ward leaders under the direction of the prefectural police. The certificates entitled the evacuee to priority of transportation for his family and baggage, to admission of his children to schools, and to ration tickets for food and clothing in the new area. Two types of certificates were used, one for the voluntary evacuee and the other for the air-raid sufferer requiring help. In the latter case the certificate entitled the holder to free transportation on the railroad (most of the railroads in Japan were government owned and operated), to food, temporary shelter, and emergency first aid.

c. *Transportation Application.* To assist the evacuee, the Ministry of Transportation and Communications established evacuation transportation offices at the main railroad stations. In these offices there were representatives of the railroads, of the Nippon Express Company, the trucking guild, the dray guild, the East Asia Transportation Company, and other transportation organizations to answer any questions raised by evacuees and also to receive their baggage. The transportation application contained such items as:

(1) Dates on which the evacuee desired to pack and ship.

(2) Name of applicant, address, place where goods to be moved were stored, nearest railroad station and distance from station.

(3) Destination, nearest station, and distances from station.

(4) Principal goods and number of items requiring packing.

(5) Number of items for which no packing was needed.

(6) Whether or not hauling or crating service was needed and if packing materials were on hand.

d. *Subsidies for Moving.* To encourage evacuation, government gave subsidies to the following classes of persons, provided they did not relocate in one of the evacuation areas or important military areas:

(1) Those who paid less than 13 cents (2 yen) city taxes or who were exempt from such taxes.

(2) Families of members of the armed forces.

e. *Shipping Designation "Evacuation Goods".* To simplify baggage handling the Transportation and Communications Ministry established a new rate classification called "evacuation goods" for the baggage of evacuees. Excluding fragile articles and animals, this covered goods which could be tied up in one bundle. The special rate for this classification on all railroads averaged about 30 percent less than that charged for freight in ordinary moving.

f. *Control of Housing and the Use of Buildings.* Under the air-defense law and its revisions, building and rent controls were set up in evacuation and reception areas. These controls, in general, rationed building materials and prohibited new construction. They also authorized city authorities to control the use of buildings and to maintain lists of vacant houses for the use of evacuees, of rooms and changes of tenants. Limited remodeling of houses, stores and the like into homes for evacuees was permitted with the government subsidizing 60 percent of this cost up to $133 (2,000 yen).

9. *Transportation.* a. *Evacuees.* The Japanese transportation system, not unlike others, faced shortages of man power, fuel and equipment. These, together with the scarcity of packing materials, caused a bottleneck in rapid evacuation. To meet this problem, transportation requests were screened and persons going in the same direction were urged to travel together. If there were enough of them, special trains were run or certain scheduled trains were designated for their use.

b. *Baggage.* Because of the demands on transportation for the war effort, the movement of evacuee traffic became extremely difficult. Transportation agencies, nevertheless, were urged to expedite the evacuation movement, and appeals were made to the general public for its full co-

operation. Professional packers and movers were unable to meet the demand for handling great quantities of baggage in a short time, so students and persons from ordinary occupations were used to help move baggage and transport goods to the railway stations. In Tokyo all horse and ox carts, wagons, motorcycles and trailers were placed under the direction of the police who apportioned their use in accordance with the demand for drayage. The public was urged to reduce baggage to a minimum, and indiscriminate moving of all kinds of household goods was prohibited. The evacuation transportation office determined the type of facility to be used. For distances of 25 or 30 miles or more railroad freight was generally selected. This office also arranged the priorities on movement by trucks or carts.

10. *Demolition of Houses (Evacuation of Buildings).* a. Demolition to create fire breaks around important factories, communication facilities and other important buildings and to clear fire lanes through the cities was begun in November 1943. The scope of this plan was enlarged six different times in the year and a half prior to the cessation of hostilities. Immediately after the saturation raids early in 1945 over 400,000 houses, or approximately two-thirds of all the buildings demolished for this purpose, were torn down in March and June. Of particular interest to this report are the "refugees" from the buildings which were demolished.

b. *Temporary Shelter.* Persons whose homes were to be demolished were given 10 to 14 days advance notice and told to seek new quarters, preferably with relatives and friends in the country. Those who by reason of employment had to remain in the evacuation area were assisted by the city authorities in finding new quarters. Many located their families temporarily, until other arrangements could be completed, in temples, public halls, public baths, restaurants, geisha houses, hotels and boarding houses. In many instances, employers were able to provide quarters for the head of the household but not for the rest of his family.

c. *Payment for Demolished House.* Payment or compensation for the loss of a house by demolition was determined by a compensation committee. This committee, which consisted of representatives from the prefectural office and the city, assessed the loss and recommended the amount of damages to be paid. The average payment was $33 (500 yen) for 36 square feet (1 Tsubo). The renter, if any, received an average of three to six months' free rent. No insurance was paid for the loss of a building destroyed under the demolition program.

d. *Purchase of Household Effects.* Useful household articles from the houses demolished to create open spaces could be sold to the city at reasonable prices (and resold by the city to those who needed them) or stored in schoolhouses, temples, prisons or theaters. Salable articles included such items as dishes, chairs, cupboards, bookcases, chests of drawers for clothing, clothing, blankets, and bedding.

e. *Estimated Number of Refugees Due to Evacuation of Buildings.* It is estimated that approximately 1,844,000 persons became refugees under the demolition program, and were forced to evacuate. The estimated data listed by the major periods of demolition are:

31 December 1943	343,000
11 December 1944	93,000
22 December 1944	50,000
15 March 1945	[1]863,000
5 June 1945	[1]350,000
10 July 1945	145,000
Total	1,844,000

[1] Saturation raids in spring, 1945.

11. *Air-Raid Sufferers.* a. An air-raid sufferer was a person who lost his home or suffered damage because of air raids. Air-raid sufferers and other involuntary refugees were expected to choose their own places of refuge with relatives or friends outside the target area. Until they were able to leave, however, the police allocated them temporary quarters in empty buildings, inns and public halls. Preparations to handle refugees were based on the assumption that not more than 20 percent of the inhabitants of a community would be involved in any air-raid disasters. The saturation raids of the spring of 1945 produced so many more sufferers than the 20 percent figure that the governmental peacetime services, augmented to meet anticipated emergency conditions, were overwhelmed. The whole system for moving evacuees, refugees and air-raid sufferers broke down and never really recovered.

12. *Emphasis on Evacuation Following Large-Scale Air Attacks.* a. The evacuation program was stimulated by each major reverse suffered by the Japanese army. The loss of the Marshall Islands in March 1944, followed by the invasion of Saipan in June 1944, was reflected in the in-

creased number of voluntary evacuees. Another high spot in the evacuation curve was August 1944, when primary school children in the third to sixth grades were evacuated. Others were in November 1944, when Tokyo was first heavily bombed, in March 1945, after saturation attacks on several major targets, and in April and May 1945, when all third- to sixth-grade pupils were evacuated plus many first- and second-grade pupils.

b. *Nonessential Persons.* After the first of the large raids on the homeland in November 1944, the Japanese were confronted with the need of getting more of the nonessential population away from target areas, so that they would not be a burden during a raid. General evacuation by households was continued but the program, except for the compulsory evacuation of certain school groups, remained on a voluntary basis until the cessation of hostilities.

c. *Increased Subsidies and Transportation Priorities.* As an incentive to encourage voluntary evacuation, moving subsidies were extended to provide 813 (200 yen) per person in each household. These new moving subsidies were granted to facilitate the evacuation by their families of infants and young children whom it would have been difficult to evacuate in a group, that is, those children of the second school year or below. The evacuation of the old people, children, pregnant women and the like received preferential treatment as compared with the evacuation of family groups. The reservation of a whole railroad car for shipment of baggage was discontinued. The number of pieces was limited to five per person with a maximum of 20 pieces per group. If a whole household was being moved, the maximum number of pieces of baggage, irrespective of the number of persons in the group, was 40. Of articles treated as hand baggage and used in traveling, each evacuee was allowed two pieces, weighing 66 pounds (30 kilograms) each.

13. *The Saturation Raids of March, 1945.* a. *Evacuation of Refugees.* After the March raids, feverish efforts were concentrated on creating additional fire breaks the better to control air-raid damage in attacks to come. This intense activity continued over a period of 2 weeks. The inhabitants or refugees from the buildings marked for demolition were told to evacuate immediately. The Transportation and Communications Ministry in its effort to expedite the evacuation movement ordered for Tokyo alone the addition of several freight trains and the diversion of 13 regular passenger trains for the exclusive transfer of refugees from demolished homes.

b. *Transportation of Air-Raid Sufferers.* The demand from the homeless for transportation became so great that procedures for transportation applications were simplified and only "transfer certificates" were required. Priority of movement was given to expectant mothers, children, the disabled and aged who were designated "special" and to those qualified to work in the building trades. Temporary offices were set up in public places to handle the accumulation of baggage. All transportation costs for the homeless were borne by the government for a period of approximately 30 days. For those with transfer certificates marked "special" or "building" this period was somewhat longer. Even these selected evacuees were restricted by the quota allowed each day because of the shortage of transportation. Travel was allowed only from the station designated by the government and on the lines bound for other government stations in the country. No one was permitted to change the date assigned for movement or to stop over en route. In Tokyo alone the number of air-raid sufferers (over a million) following the 10 March 1945 raid on that city was so great that 29 special trains were reserved solely for their evacuation which was achieved without their having to present the usual documents.

c. *Transportation of Air-Raid Sufferers' Baggage.* The tremendous volume of evacuees made it necessary to restrict the shipment of essential personal baggage to one of two ways: one package of essential clothing and bedding of not more than 110 pounds (50 kilograms) per person, five pieces per family by separate and later consignment or one piece weighing 66 pounds (30 kilograms) per person, three pieces per family by railway express. Luggage of other persons was not accepted unless it was vital to the war effort.

d. *Storage of Air-Raid Sufferers' Baggage.* The following arrangements were made for storage of baggage:

(1) The goods were stored in selected storehouses in the country;

(2) Air-raid sufferers had to bring their belongings to specific places on assigned dates;

(3) Such storage service was limited to clothing, and bedding with not more than five bundles to a family.

14. *Evacuee Labor to Island of Hokkaido.* The

policy of the government was to use evacuee man power to increase food production. Accordingly, a plan was drawn as of 31 May 1945 by the Agricultural, Commerce, and Home Ministries whereby city evacuees and air-raid victims were to be sent en masse to Hokkaido, the most northerly of the four main islands of the Japanese empire, to devote their efforts to agricultural work. The plan was one of the results of the March raids which left so many persons without occupation and, in addition, created a big food supply problem. Hokkaido did not have sufficient labor for its mines, fisheries and agricultural industries, but it did have approximately 1,250,000 acres of farm land not under cultivation. Farming was to be devoted to the cultivation of wheat, barley, pumpkins, potatoes and other vegetables suitable for the climate. Initially it was planned to send 50,000 families or 200,000 evacuees to Hokkaido during the summer of 1945. Each farmer was to be given, rent-free, 2½ acres (one Chobu) of land. After one year, in addition to a gift of from 25 to 35 acres of uncultivated land to each family, the government would also supply, gratis, implements and other farm necessities. Temporary quarters for evacuees were provided in colonial training centers, schools, temples and homes. All expenses were paid by the government. Crops raised on the 2½ acres of land were for the use of the family. For the first 6 months the government provided evacuees with food and a sum of $2 (30 yen) a month per person. Out of the estimated 200,000 evacuees proposed, only 17,569 or less than 10 percent, actually went to Hokkaido during the late spring and summer of 1945. Of that number Tokyo furnished 1,674 families or 7,832 individuals. The reasons why such a small number of evacuees accepted this opportunity were discouraging reports of hardships suffered by the first to go and the reluctance of many to leave the vicinity of their homes. There was nothing mandatory about this Hokkaido program.

15. *Statistical Summary.* a. The voluntary precautionary evacuation program was started in January 1944. For the 10-month period ending 31 October 1944, the month before the first air attacks of any major proportions on the home islands, it had resulted in the evacuation of 2,090,000 persons, or slightly less than 15 percent of the population. The heavy bombings early in 1945 produced a volume of air-raid sufferers and, at the same time, so increased the number of voluntary evacuees that the total of all evacuees and sufferers during the next 10-month period (to the end of hostilities, 15 August 1945) multiplied four times. The comparative data follow:

Evacuation area	Est. pop. Feb. 1944	Est. evacuees as of 31 Oct. 1944	Percent of est. pop.	Est. voluntary and sufferers evacuees, 15 Aug. 1945	Percent of est. pop.
Tokyo	6,569,000	1,040,000	15.8	4,139,000	63.0
Yokohama	1,033,000	153,000	14.8	433,000	41.9
Kawasaki	380,000	50,000	13.2	230,000	60.5
Yokosuka	298,000	32,000	10.7	58,000	19.5
Nagoya	1,348,000	144,000	10.7	848,000	62.9
Osaka	2,842,000	384,000	13.5	1,809,000	63.7
Kobe	918,000	152,000	16.6	558,000	60.8
Amagasaki	270,000	42,000	15.5	70,000	25.9
Moji	135,000	11,000	8.1	35,000	25.9
Kokura	184,000	25,000	13.6	34,000	18.5
Yawata	252,000	37,000	14.7	52,000	20.6
Tohata	82,000	13,000	15.9	12,000	14.6
Wakamatsu	87,000	7,000	8.0	17,000	19.5
	14,398,000	2,090,000	14.5	8,295,000	57.6

b. Data are not available on a nation-wide basis separating the voluntary evacuees from the sufferers who became evacuees. The ratio, however, of the total voluntary evacuees to population in cities where sample data shown below were obtainable ranges from 4 percent in Kyoto, a city which was not bombed, to more than 45 percent in Kobe, a city bombed several times. The reverses suffered by the army, particularly during the spring of 1945, when air attacks did get through the air defenses and cities were bombed, stimulated voluntary evacuation.

City	Estimated population	Estimated voluntary evacuees, 31 Oct. 1944[1]	Percent of population	Est. total voluntary evacuees, Aug. 1945	Percent of population
Tokyo	6,569,000	1,040,000	15.8	2,807,000	42.7
Osaka	2,842,000	384,000	13.5	730,000	25.7
Kobe	918,000	152,000	16.6	429,900	46.8
Nagasaki	286,439	14,900	5.2	[2]	---
Kyoto	1,089,726	------	---	46,000	4.2
	11,705,165	1,590,900	13.6	4,012,900	34.3

[1] Before large scale attacks on the home islands.
[2] Not available.

16. *Nagasaki, the Atomic-Bomb City.* a. Nagasaki, in the southern part of the island of Kyushu, had done very little effective precautionary planning for the dispersal or evacuation of its nonessential persons. Its plan, however, was substantially the same as those of other large cities but contained no provision for the evacuation of air-raid sufferers. It had completed only three of the six stages of demolition (evacuation of buildings), had undertaken no part of the program for group evacuation of

school children, and had reported only a very small number of evacuated nonessential persons (about 90 percent of these had left in October 1944, at the time of the first stage of the demolition program). It had been estimated by the Nagasaki authorities that 95,000 people, or about one-third of the population, were potential voluntary evacuees. It was freely admitted that very little had been done to push the program because of:

(1) Inability to persuade the people that the city would be bombed intensively and that hence it would be necessary to evacuate nonessential persons.

(2) The lack of transportation on the island of Kyushu.

(3) The railroad bottleneck at Moji, the principal point of entry between Kyushu and the island of Honshu, through which munitions and supplies for the war effort had to pass.

(4) Lack of housing in other parts of the prefecture for voluntary evacuees. What had been available had been used by those refugees whose homes had been demolished to create fire breaks.

(5) Lack of gasoline for civilian motor transportation.

(6) Insufficient places for schools, disinclination of parents to leave their homes and the absence of any mandatory prefectural evacuation order.

b. Nagasaki had experienced some bombings prior to 9 August 1945 (date atomic bomb was dropped), and the governmental services handling the emergencies had functioned fairly well. The atomic bomb disrupted these services so completely that there was complete chaos. Available statistical data relating to evacuation and welfare up to the cessation of hostilities in August 1945, show:

Voluntary evacuees	14,900
Refugees due to demolition of homes to create open spaces	10,292
Casualties (dead and wounded)	47,335
Air-raid sufferers due to loss of home by air attack (mostly from the atomic bomb)	214,900
Total	287,427

17. *Comments.* a. The plan for civilian evacuation was based on the assumption by the Japanese that enemy air attacks on the homeland could not be delivered on any large scale or maintained for an extended period. The government thought that the normal public services, augmented to meet emergencies, could take care of the damage done by such aircraft as did get through the air defense, notably the Doolittle raiders in 1942, and it predicated its advance plans on that assumption. Under the saturation raids in the spring of 1945, many elements of the evacuation program collapsed. Thereafter no major changes were made in the program, but efforts were made to intensify many features of the plan.

b. Voluntary precautionary evacuation of nonessential persons from target or evacuation areas to the homes of relatives and friends outside those areas began early in 1944 and continued on the same voluntary basis even after the saturation raids. Impetus to this movement, which proved to be quite successful, came with each major reverse suffered by the Japanese forces in the field. The number of pre-raid voluntary evacuees, not including air-raid sufferers, ranged from 4 percent in a city such as Kyoto, which was not bombed, to over 45 percent in a city which had been bombed heavily.

c. The Japanese planned to evacuate air-raid sufferers in much the same leisurely manner which they had employed with the voluntary evacuees. They were unprepared to meet the extremely heavy demands of the sufferers upon transportation after the spring bombings. Apart from school children there was no attempt to evacuate refugees to predetermined areas. The single exception to this, and it did not prove successful, was the evacuation of a few thousand sufferers to an agricultural project on Hokkaido.

d. The control exercised over the movement of persons, through the issuance of moving certificates only after careful screening proved of value in keeping essential war workers in target areas. Such certificates also were of value in establishing transportation priorities and allotting transportation space. Under saturation bombing this system broke down because there were too many applicants and insufficient transportation.

e. Refugees whose homes were demolished to create fire breaks were not provided with substitute housing, although this demolition program was intensified six different times and involved upwards of 1,800,000 persons. Eventually, such refugees were treated in the same way as voluntary pre-raid evacuees.

f. The lack of building materials, due to priorities established for the armed forces, precluded any new housing for evacuees and refu-

gees. These persons, in excess of 8,000,000 sought refuge with relatives and friends outside of the target areas. This meant doubling up in already crowded communities.

g. The group evacuation of primary school children, a measure which eventually became compulsory, was the one outstanding success of the program. Approximately 90 percent of the primary school population was evacuated in two major efforts, the first in August 1944, before the intensive bombings, and the other in April 1945, after the saturation raids.

B. POST-RAID EMERGENCY WELFARE

1. *Statutory Authority.* Emergency relief measures for those who lost their homes in air attacks (post-raid emergency welfare) were based upon the provisions of the Wartime Disaster Relief Law of 1942. For the purpose of this section of the report these emergency welfare measures covered the few days from the time of the attack until the time when the regular peacetime welfare organization could start to function. First-aid treatment of the injured and rescue work are covered in other sections of this report.

2. *Provisions of the Relief Section of the National Law.* The more important features of the wartime disaster relief law as it concerned post-raid emergency welfare were:

a. Provision for compensation to Japanese nationals (and for their families) who were injured directly or indirectly by enemy action.

b. Three types of compensation were provided: relief, pension and allowance. (Pension and allowance are covered in another section of this report).

c. The prefectural governor was responsible for the administration of relief.

d. Types of relief were:

(1) Supplying of household effects.

(2) Allotment of food in case applicant had been burned out.

(3) Giving and lending clothing, bedding and other necessities.

(4) Medical and maternity expenses.

(5) Furnishing school supplies.

(6) Funeral expenses.

(7) Any other items, including money, deemed necessary by the prefectural governor.

3. *Limitation of Funds.* Funds for relief were limited as follows:

a. Payment of actual cost of temporary shelter. This amounted to 6 cents (1 yen) per individual for rental of rooms in such public institutions as might be available and 18 cents (3 yen) per individual per day for food and shelter in inns or restaurants.

b. Maximum of $23.33 (350 yen) per household toward paying for the construction of temporary dwellings.

c. Maximum of 4 cents (60 sen) per individual per day for a supply of foodstuffs such as boiled rice.

d. Maximum of $1.33 (20 yen) per individual for grants and loan of clothing and $4.33 (65 yen) for bedding.

e. Maximum of $1.00 (15 yen) per individual or $3.00 per household for daily necessities such as dishes, cooking utensils, wooden clogs, umbrella, paper and towels.

f. Actual cost for medical and maternity services.

g. Actual cost of books in the case of school supplies and a maximum of 16 cents (2.50 yen) per individual for stationery.

h. Maximum of $2.00 (30 yen) per individual for funeral expenses.

i. Actual cost of coolie hire or cartage for carrying out relief operations.

j. Granting of shelter, boiled rice and foodstuffs was for a maximum of 15 days but, in cases of undue hardship, permission might be secured from the governor, in advance, to extend the period of such relief.

k. Application for relief was made through the city authorities and forwarded to the governor.

l. In acute emergencies due to enemy action, the mayor or head of the city had authority to secure temporary housing or shelter at once and to distribute boiled rice and food before he sought further instructions from the governor of the prefecture.

4. *Welfare Aid Stations.* a. It was believed by those in charge of planning for emergencies that not more than 20 to 30 percent of the people in any target area would be involved in wartime disaster. The police assumed charge immediately whenever there was a bombing attack and directed air-raid sufferers to welfare aid stations. These were often in schools, inns, restaurants, temples and public meeting halls, mostly because their locations were well known and because they had kitchen facilities. There, food, bedding, clothing when necessary, and fuel were furnished

free for a short period, generally not more than 5 days. The food was usually cooked by members of a volunteer organization of professional cooks. When the emergency was greater than could be handled at the aid stations, neighboring communities were called upon for help. This occurred at Nagasaki after the explosion of the atomic bomb.

b. *Other Services at the Aid Station.* Many of these welfare aid stations also functioned as first-aid stations. Others employed consultants to advise sufferers on evacuation, employment, relief and traffic conditions. Air-raid sufferers' certificates were issued by the ward leaders and leaders of the block associations (Chokai) at these aid stations. One of the principal functions of the block leader was to assist the police in screening out persons who were not entitled to aid from his area.

c. *Distribution of Sufferers.* One function of the welfare aid stations was to investigate and separate the air-raid sufferers as quickly as possible into two groups:

(1) Those who could be evacuated promptly to relatives and friends in the country. The block and neighborhood leaders assembled groups of these and aided them in getting transportation.

(2) Those for whom temporary shelter within the area had to be provided because they were essential to the war effort. This group was given priorities with the Housing Section of the city and housed in empty rooms and buildings which had been vacated by voluntary evacuees.

5. a. *Food Storage Depots.* The nation's food supply was controlled by the national government which established reserve depots throughout the empire. These were ultimately used as points for the distribution of staples (exclusive of rice), fruits and vegetables to air-raid sufferers. The governor of the prefecture directed distribution and was authorized to distribute up to one-third of all stored supplies, but could not distribute more without the permission of the national government. Items distributed were bread, crackers, condensed milk, canned food, pickles, pickled plums, bean cheese (Miso), sauce (Shoyu), rice wine (Sake), sugar, candy, candles, matches, toilet paper, footwear, towels, soaps and house remedies. Blankets were available on loan.

b. *Food Control Organization.* The central food and provisions corporation (Chuo Shokuryo Eidan) controlled the supply and distribution of food. This corporation was started 1 September 1942 under the Ministry of Agriculture and Forestry. It was supported by a national fund of $6,666,666 (100,000,000 yen), subscribed half by the national government and half by the merchants of the various prefectures. The national headquarters was in Tokyo.

6. *Distribution of Emergency Food Supplies.* The police who were responsible for the actual distribution of food during emergencies set up the following order of priorities for the public:

a. Air-raid sufferers at emergency aid stations.

b. Infants without mother's milk, the sick and wounded.

c. Air-defense personnel.

d. Those performing special services in order to provide emergency restoration of electricity, gas, water, and communications in factories and offices.

e. Other as determined by the police.

7. *The Saturation Raids of March 1945.*

a. *Food.* The air attacks during March 1945 were far in excess of anything the Japanese had planned for. The number of air-raid sufferers (over a million in Tokyo itself) far exceeded the capacity of the aid stations to care for them. The demands for food, straw mats and blankets exceeded the emergency supplies available. Hence supplemental food distribution points were set up, many in railroad stations. Efforts were made to supply sufferers three meals a day consisting of 12.4 ounces (350 grams) of rice, supplemented by two ounces of canned fish per meal and pickled plums, radishes and other canned food. The period of free service to a sufferer was reduced to a maximum of 5 days, after which the sufferer had to make his own arrangements for food and shelter. On 30 March 1945 the national government commenced distribution of 24 sticks of dried tuna fish and one can of food per person to the residents of the major cities in Japan for quick relief of air-raid victims. Tokyo announced that bleached cotton socks would be given victims in Tokyo through the medium of some of the larger department stores. After the 13 April raid, Tokyo authorities further relaxed food requirements by giving air-raid victims, upon their verbal declaration, enough food for 5 days.

b. *Sufferer's Certificate.* Prior to 30 March, air-raid victims were required to show sufferer's certificates secured from their ward leaders in order to receive relief. So many sufferers resulted from the March raids, however, that it was im-

possible to maintain that requirement, and the police had to rely upon screening by block and neighborhood group leaders to determine who should receive aid.

c. *Local Gestures of Sympathy to Tokyo.* Air-raid victims in the emergency period following the 10 March raid on Tokyo were fed by neighborhood units, friends and government organized relief agencies. Public bathhouses opened their baths without cost to the victims, and neighboring residents made their private baths available to the public. The committee on enforcement of relief measures distributed soup, rice, and other foods to victims remaining in the city. Food could be obtained without ration books on and after 12 March 1945. Those departing for areas outside of Tokyo were given essential necessities for a short period, provided they carried documents certifying them to be victims of raids. Many refugees evacuated from Tokyo to Shizuoka prefecture, located between Tokyo and Nagoya. On 17 March Shizuoka authorities asked the heads of cities, towns and villages to distribute staple foodstuffs without demanding any certificates and to provide food for from 3 to 30 days, until the refugees had settled with their families and relatives. Sympathy aroused in other more distant prefectures was evidenced by the arrival in Tokyo of 40 carloads of fresh and canned fish from the Hokkaido-Aomori area on 16 March and by an offer from Gifu prefecture of its transportation services to collect and dispatch 15 carloads of firewood and charcoal. After the 10 March raid the War Calamity Deliberative Council of the Welfare Ministry set up the Special Labor Information Bureau to offer factory workers deprived of their jobs by the raid counsel and assistance in seeking work elsewhere. The Tokyo railway bureau offered men and women between the ages of 14 and 50 employment as engineers, truck-drivers, repair workers and, also, employment in printing and construction plants, as well as offices.

d. *Financial Aid to Evacuees and Sufferers.* Large-scale financial aid to air-raid victims was made by official and semi-official organizations. Taxes were reduced or abolished for victims who lost their homes or places of business. The Agriculture Central Bank provided loans without security to evacuees and refugees who were establishing themselves as farmers. Negotiations were made through agricultural associations in the prefectures as well as directly by the individual.

e. *Civilian Monetary Relief.* The most impressive of all financial relief projects was the work of a committee set up by leading Japanese financial houses. On 27 March 1945 this committee launched a drive for funds to aid the victims, setting the goal at $3,333,333 (50,000,000 yen) with large quotas for the principal banking groups. The funds were handled by the War Victims' Relief Association which was organized with government assistance and replaced the wartime People's Mutual Assistance Association for relief of nationals returning from overseas.

f. *The Emperor's Relief Gift.* Following the large raid on Tokyo in March, the emperor issued a rescript and donated $666,666 (10,000,000 yen) for the relief of air-raid victims. The sum was turned over to the War Victims' Relief Association (Sensaiengo Kai). The large financial houses of Japan also added millions to its fund.

g. Unlike other members of the International Red Cross, the Japanese Red Cross Society did essentially nothing in the emergency welfare field. Its functions are described in another section of this report.

8. *Nagasaki, the Atomic-Bomb City.* a. The emergency welfare plan for Nagasaki followed the pattern found in other centers. The city had experienced some bombing prior to the atomic bomb (9 August 1945), and the welfare agencies had functioned fairly well. But with the explosion of the atomic bomb, practically the entire welfare organization fell apart. Most of its aid stations were destroyed with their personnel as were most of the points for the preparation and distribution of food. Neighboring villages prepared the emergency food and rice and brought them to the city for distribution by block associations and auxiliary police and fire units (Keibodan). The following tabulation shows that during the 10 days following the dropping of

Meals furnished

Date	Breakfast	Dinner	Supper	Total
9 Aug. 1945---	-----	25,000	71,000	96,000
10 Aug. 1945---	65,600	67,500	67,500	200,600
11 Aug. 1945---	53,600	47,100	41,300	142,300
12 Aug. 1945---	27,500	28,900	33,400	[illegible]
13 Aug. 1945---	26,800	23,100	27,400	77,200
14 Aug. 1945---	22,350	5,500	2,100	[illegible]
15 Aug. 1945---	1,200	1,500	1,500	4,200
16 Aug. 1945---	1,200	1,200	1,200	3,600
17 Aug. 1945---	1,200	1,200	1,200	3,600
18 Aug. 1945---	1,000	1,000	1,000	3,000
	[illegible]	[illegible]	[illegible]	[illegible]
	200,450	202,600	247,200	[illegible]

the bomb 650,250 meals were served of which 52,000 were dried bread and 598,250 boiled rice. Approximately 1,050 bags of rice were used for this purpose.

b. Prior to 9 August 1945 not over 1,000 air-raid sufferers' certificates had been issued for all of the previous raids on Nagasaki. These certificates carried with them certain privileges relating to pensions and claims which are discussed in another section of this report. Immediately after the 9 August date more than 47,000 certificates were issued, and claims and pensions resulting from the bombing were paid with funds from the national treasury.

c. The lack of temporary shelter due to the complete levelling of most of the structures in the city added to the local difficulties with the approach of winter.

9. *Supplemental National Relief Measures.* a. *Council for Emergency Relief Measures* (*Kyugo Taisaku Kakuryo Kogi-Kai*). After the 10 March 1945 raid on Tokyo there was a flurry of activity in government quarters. The cabinet met on 11 March 1945 to discuss and decide on "urgent air-raid relief measures." It set up a cabinet members' "Council For Emergency Relief Measures" (Kyugo Taisaku Kakuryo Kogi-Kai) composed of the Minster of Home Affairs as chairman, the Ministers of Welfare, Agriculture, Commerce, Transportation and Communications, and Minister without Portfolio Ishiwata to "map out effective plans for swift relief in evacuation, clothing, food, transportation and communications." A collateral council to carry out these plans was formed of members of the various ministries with the vice chairman of the air-defense general headquarters as chairman. This council was named the "Relief Measures Enforcement Committee" (Kyugo Taisaku Jisshi Iinkai).

b. *War Victims' Relief Association* (*Sensai Engo-Kai*). To supplement the wartime disaster relief law, a national organization was established on 29 April 1945 to provide air-raid victims with necessities not included in the disaster relief law. Funds for that purpose were contributed by the government and by large industrial groups, each providing $3,333,333 (50,000,000 yen) to which was added a $666,666 (10,000,000 yen) grant from the imperial household. The chairman of the organization was the Minister of Welfare. Other members were the Ministers of Home Affairs, of Finance, of Transportation and Communications, the Governor-General of Korea, the Governor-General of Formosa, the Imperial Household Minister, the President of the House of Peers, and three prominent citizens. One task assigned by the cabinet on 8 May 1945 to this important agency was the carrying out of measures which provided for:

(1) Speedy payment of relief money as prescribed by the wartime disaster relief law.

(2) Establishment of dormitories for war victims.

(3) Protection of war orphans and disabled people.

(4) Payment of relief money to those who needed aid, even though they might not be eligible for it under the wartime disaster relief law.

(5) Improvement of methods to insure the livelihood of war victims and of measures for vocational guidance.

(6) Free medical care at government expense to air-raid victims for a period of 2 months after the disaster.

(7) Payment of allowances to include:

(a) Allowances for loss of household effects amounting to $13.33 (200 yen) for one person, $23.33 (350 yen) for two persons in a family, $33.33 (500 yen) for three or more persons in a family.

(b) Consolation allowance to the bereaved not to exceed $100 (1,500 yen).

(c) Injury allowances up to $100 (1,500 yen).

(d) Needy families.

(8) Reduction in taxes.

(9) Financial aid from the national welfare chest.

10. *National Program for Emergency Housing.* To meet the housing situation resulting from saturation bombing, the Welfare and Home Ministries initiated an emergency building program during the fall of 1945 to provide shelter for air-raid sufferers and returning evacuees now that hostilities had ceased. In all 300,000 small wooden houses were to be erected with an allotment of 55,000 for Tokyo, 30,000 for Osaka, 18,000 for Kobe, 10,000 for Hiroshima, 5,700 for Nagasaki and varying numbers for cities in other prefectures where bombing had been heavy. The project was subsidized in part by an imperial grant of lumber. It was expected that one of these houses would sell at about $200 (3,000 yen) or rent at approximately $2.00 (30 yen) per month. In some sections, Tokyo for example, it was reported that applications for these houses greatly

exceeded the supply, whereas in Nagasaki the opposite was true. Purchases could be financed through local banks up to approximately one-half of the purchase price at the rate of 3.6 percent. The first public viewing of houses took place in late November 1945.

11. *Comments.* a. Emergency welfare plans were designed to cope only with emergencies caused by small, sporadic and infrequent air attacks. The Japanese thought that the regular public agencies, augmented as the immediate emergency might demand, could adequately handle any war disaster. These agencies had met the emergency requirements of the Doolittle attack in 1942, and the civil authorities had been assured by the army that few bombing planes would be able to get through the air defenses again.

b. The welfare aid stations functioning under the general supervision of the police performed well in small raids emergencies. Under saturation bombing they were wholly inadequate. The demands for sufferers' aid came in such volume that emergency reserve supplies of food, bedding, medicines and the like were soon exhausted.

c. The Japanese Red Cross Society, although a member of the International Red Cross, did not operate in the emergency welfare field.

d. The control over services rendered to air-raid sufferers through the medium of the sufferer's certificate functioned satisfactorily so long as the bombings were not numerous or heavy. When that happened, however, the system collapsed, and the police were forced to rely upon block and neighborhood leaders to identify those entitled to aid, relief and other privileges.

e. The lack of temporary housing of any kind made it necessary to scatter the air-raid sufferers throughout the area under attack until such time as they could be evacuated to relatives and friends in the country. Lack of labor and of building materials intensified the housing shortage.

f. In some areas lack of cooperation between the municipal and prefectural authorities contributed to the difficulty of getting an adequate emergency welfare plan into operation.

g. The preparation of food by volunteer professional cooks at welfare stations and arrangements to supplement this with food from neighboring communities was one phase of the plan that paid dividends. One outstanding example of this occurred at Nagasaki where the atomic bomb destroyed all facilities, and where it was necessary to rely entirely upon neighboring auxiliary reserve units for supplies of every kind.

h. The emergency post-war housing program calling for 300,000 small units was inadequate to meet the demands for housing when the evacuees returned to the sites of their former homes. The city of Tokyo committed itself to the erection of 10,000 units in addition to those allotted to it as part of the national program and received applications far in excess of that number. Construction under this program was not started till after the war ended and, as late as November 1945, only a few sample houses had been erected.

i. The Japanese did not use food trains, as the Germans did, or even plan to use them to feed the people of stricken areas.

C. WAR DAMAGE CLAIMS

1. *Introduction.* a. *Governmental Philosophy.* The Japanese government undertook to protect its nationals financially against personal injury and death as well as against property loss resulting from enemy action. There were two general types of government indemnity arrangements: one a low-premium insurance program, the other a straight compensation plan. The insurance program was announced in December 1941 when a national law covering enemy damage to property was enacted. In March 1943 a similar law providing insurance against personal injuries and loss of life was published. The compensation legislation was enacted soon after Japan attacked the United States, one law in December 1941 indemnifying air-defense workers, the other in February 1942 compensating all air-raid victims, as well as those persons whose property had been expropriated by the government for emergency relief. With the exception of the war property damage insurance program, the sums to be paid under the government protection schemes were very small when judged by American standards. Owners of large and vulnerable industrial plants, in general the same people who owned the insurance companies, were influential in writing the damage law. Thus the liberality of the war property damage insurance provisions cannot be taken as evidence of an exceptional generous national philosophy with respect to the average private citizen. Included in this report will be a discussion of compensation to owners of buildings

insured against demolition under the firebreak program.

b. *Governmental Organization.* (1) *Insurance.* The two insurance programs were administered by the national Ministry of Finance through the regular private companies handling life, fire and marine insurance. These companies were permitted to retain a small fraction of the premiums to cover their cost of administration. Dealing with the separate companies proved to be too cumbersome, however, so the government, in effect, took over the management of the private companies by changing the two national insurance societies, of which all the companies were members, into control associations. To the latter was given full authority over the entire insurance program with the single exception of settling property damage claims amounting to 1,000,000 yen or more. The control association maintained branches in all of the major cities, as did also the Ministry of Finance. Operations were localized as much as possible, in order that they might not be disrupted in case damage to transportation and communications should isolate them from Tokyo. Thus, authority for all transactions in Osaka, for example, including the evaluation of properties to be insured, the supply of money by the banks to the local insurance companies for payment of claims, the adjudication of differences between a claimant and his insuring company, the withholding of funds in the form of "blocked bank deposits," (described below) and the release of such blocked deposits, resided within the city of Osaka without reference to the national offices of the insurance companies, to the control associations or to the Ministry of Finance, except for periodic reports.

(2) *Compensation.* The two compensation laws were administered by the prefectural offices. Claims of city dwellers based on the legislation applying to all air-raid victims were investigated by city authorities who passed them on to the prefectural welfare departments for payment. But the law applying solely to air-defense workers was handled entirely by the peace preservation sections of the prefectural police bureaus. Business connected with firebreaks compensation was handled jointly by city and prefectural planning sections in the respective public works departments.

2. *War Casualty Insurance.* a. *Provisions.* Under the wartime loss of life and personal injuries act (Senso Shobo Shogai Hoken Ho) of 3 March 1943, providing what will be referred to in this report as "war casualty insurance," any Japanese national in good standing, regardless of age, sex, occupation and residence, whether a member of the armed forces or a civilian, could be insured for any desired amount up to 5,000 yen. The premium for a one-year policy was 3 yen per thousand for a civilian residing within Japan proper, and 10 yen per thousand if abroad or a serviceman overseas. On 1 January 1945, this differential was removed and the uniform rate of 3 yen per thousand was established for all policies. Although purchasable at insurance company offices, this war casualty insurance had no relationship whatever with private life insurance policies. It paid the benefits provided, regardless of other insurance carried, but paid them only if death or injury were due to air raids, anti-aircraft fire, fire, fire-fighting, panic or other incident caused by enemy action. A casualty incurred during blackout or air-defense training was not considered to warrant payment. Benefits included not only payment of the principal amount of a policy to the survivors of a deceased person, but also to the injured for the loss of both eyes, both legs or both arms. Half of the principal amount would be paid to the injured for the loss of one eye, one leg, one arm or for total deafness resulting from enemy action. For other injuries a graduated percentage of payments was made. There were no further benefits under the law, such as convalescent care funds for the injured, support for surviving widows and orphans, unemployment payment for time lost due to injury, or money for retraining if a person were incapacitated for his customary work.

b. *Administration.* Although the fire and marine insurance companies were also authorized to issue war casualty insurance, more than 95 percent of this type of national insurance was issued by the life insurance companies. Applications for policies could be made at any main, branch or business office of these companies and, if 30 or more persons in an office, school or factory wished to apply, they could do so as a group. The policies took effect on the day following the acceptance of the application and payment of premium. For their trouble in administering the insurance, the companies were allowed to retain 1 percent of the premiums collected, and salesmen were given 50 sen for each policy sold regardless of the principal amount of the policy.

When the insurance was first made available to the public, there was an almost imperceptible amount of interest as reflected by the number of policies issued. The national government, concerned over this indifference, asked the control association of life insurance companies to promote the purchase of policies. A national advertising campaign utilizing the radio, newspapers and cinema, launched in late 1943, had no noticeable results. On 12 January 1945 the commission accorded salesmen was increased to 8 percent of the premium and this, combined with the increased imminence of danger, produced an upturn in the number of applications.

c. *Payment of Claims.* Claimants were required to present at the main local office of their insuring company, within 30 days of death or injury to the assured, the following documents: (1) physician's certificate of death or injury obtained from the claimant's local police station, (2) certificate of family relationship between the claimant and the assured, in case of death, obtained from the census registry of the ward office; or satisfactory proof, if not a relative by blood or marriage, that the claimant was the rightful beneficiary, (3) the insurance policy, and (4) census registry certificate of death. Other than relatives, only those who were dependent upon a deceased person for support could be beneficiaries. The company was responsible for investigating questionable claims, but in all other cases was required to pay claims within 30 days after presentation. The provisions of war casualty insurance were so simple that there was small occasion for disagreement between a claimant and a company. In case of such a dispute, however, the matter was referred to the local branch of the control association for adjudication. If a claimant were still not satisfied with the decision rendered, he could, theoretically, appeal his case to the civil courts. No instance was recorded in Japan in which it was necessary to refer even one of these cases to the local control association for settlement so that, in effect, the judgment of the company was final. Funds for the payment of claims were borrowed from banks by the local branch of the control association and were deposited to the accounts of the insurance companies according to their need. The banks were reimbursed by the Ministry of Finance through its branches.

d. *Operations.* The following table of war casualty insurance figures supplied by the national control association for life insurance companies presents an account of the development of policy issuance and the amount of insurance in force:

As of	National figures		Tokyo metropolitan district	
	Persons	Amount (yen)	Persons	Amount (yen)
1944				
1 Jan. --	1,656,687	2,734,997,120	781,165	1,235,889,181
1 July --	3,672,137	5,592,780,766	1,599,378	2,180,180,645
1945				
1 Jan. --	9,335,812	16,009,791,110	1,215,237	7,163,113,168
1 July --	15,285,771	32,002,895,581	5,611,008	11,346,146,068
1 Nov. --	13,674,106	31,372,906,339	4,326,540	9,861,937,360

The table shows that, after the insurance had been available to the public for nearly 1 year hardly more than 2 percent of the population of Japan had taken out policies and that the average amount for which policies were issued was less than 2,000 yen. By 1 July 1945, at the height of the Japanese crisis, slightly more than 20 percent of the population was covered. The law was still in effect as of 1 November 1945 and, theoretically, it was still possible to take out a policy on the ground that the nation was still in an emergency status. In fact, a considerable number of policies was taken out or renewed after the Japanese surrender on the supposition that American occupation troops might be willfully destructive. The table shows, however, that many of the policies, issued annually, had run out and had not been renewed. The figures for the Tokyo Metropolitan District run relatively far ahead of those for other sections of Japan for, on 1 January 1944, nearly half of the total number issued for the entire country was in Tokyo, and on 1 July 1945 the Tokyo policies accounted for one-third of the total, but the average value of the policies was not materially different in Tokyo from that of the rest of the country. A sample of the extent and development of interest in this insurance in a city outside of Tokyo or other large metropolitan area is to be found in the following figures from Nagasaki:

As of—	Population (round numbers)	Persons Insured	Number of claims presented	Number of claims paid
1 Aug. 1943----	284,000	51	---	---
1 Aug. 1944----	281,000	8,659	3	---
1 Aug. 1945----	225,000	84,759	92	20
1 Nov. 1945----	(1)	86,558	1,520	774

[1] Unknown.

Six months after the insurance was offered to the public, less than two hundredths of 1 percent of the population had applied for it; 2 months after the Yawata raid in June 1944 the figure stood at 3 percent; and at the time of the

atomic bomb incident only one-third of the population was covered. An account of the application for and payment of claims is presented in the next table (amounts are in yen):

As of	National figures		Tokyo metropolitan district	
	Claimed	Paid	Claimed	Paid
1 Jan. 1944	590,061	537,061	149,854	120,854
1 July 1944	4,299,396	3,968,425	999,634	918,534
1 Jan. 1945	13,196,195	12,374,267	3,264,282	3,051,967
1 July 1945	61,423,581	57,811,093	36,245,338	34,509,075
1 Nov. 1945	138,689,114	122,797,827	64,620,587	61,477,294

The presentation of claims as of 1 January 1944 in the above table and in the Nagasaki figures represents claims made for civilians and for servicemen who were casualties outside of Japan proper. Both the national and Tokyo figures show a relatively small lag between presentation of claims and payment thereof. The table does not show what percentage of the presented claims were paid, and what percentage was either refused or partially paid, for at the dates arbitrarily chosen for the statement of figures there were always claims in process of being paid which would not show up in the totals of applications and settlements within a given period. National insurance officials were confident that all claims presented either had been paid or would be paid except for those in which doubt existed as to the authenticity of the supporting papers. These officials stated that the delay in paying claims evident in the Nagasaki figures was a local matter rather than national in character, and that delays in settling claims could be attributed for the most part to the fire-raid destruction of insurance company records and to the difficulties of obtaining the necessary certifying papers, rather than to obstructionism on the part of insuring companies. The surprising aspect of the entire operation was the fact that not all those entitled to insurance payments actually registered their claims, a fact explained by the following reasons: (1) loss of policy and difficulty of establishing claims, (2) dispersal of beneficiaries, and (3) decreased value of the yen causing many persons to feel that the effort to collect, particularly in the case of injury, was not worth the effort.

e. *Comments.* The life insurance companies were never particularly enthusiastic about the war casualty program, and the fire and marine companies paid little attention to it. Since the former were chiefly responsible for what success it achieved, it is not surprising that with more than 350,000 casualties (dead and injured) in Japan there was paid out under the war casualty insurance a total amount of but 134 million yen. By the end of the war, when the great bulk of the casualties was occurring, the average amount of death benefit payment would not buy enough food, even at legitimate prices, to support the average family for long. The fact that more people did not carry the inexpensive casualty insurance was not entirely the fault of the government, for, although the government-inspired campaign to promote sale of policies was not very extensive, there was a reasonably wide knowledge on the part of the general public that the insurance was available. Insurance officials in cities some distance from Tokyo claimed that many Japanese, particularly older persons, feel that the taking out of life insurance hastens the day of death, but Tokyo insurance men claimed that the lack of interest in war casualty insurance was due less to the lack of insurance-mindedness on the part of the Japanese than to the conviction that (a) the Japanese cities would not be heavily attacked, and (b) the individual citizen would be able to take care of himself if and when danger arrived. The figure of 5,000 yen representing the maximum amount for which an individual policy would be issued was arrived at by striking an average of all private policies in effect at the time the war casualty law was formulated. Although the total possible coverage was small by Western standards, the premiums were also very low, well within the financial ability-to-pay of the average Japanese. The rates were based on British rates of World War I, when civilians were not seriously exposed to air attack. The relatively large number of policies issued in Tokyo was due partly to the higher educational level of the people, and partly to the device used by insurance companies whereby salesmen were encouraged to sell 5,000 yen worth of war casualty insurance at 3 yen per thousand, and 5,000 yen of private life insurance at 35 yen per thousand (some private policies accepted liability for death from war causes while others did not), pointing out to the customer that he was buying 10,000 yen worth of life insurance at the inexpensive rate of 19 yen per thousand. With this arrangement, the private companies found it possible to increase their own business, and for those persons who could afford this amount of premium, the adequacy of the coverage at reasonable cost more nearly approached

a figure corresponding to the practice of other nations. Except for the red tape involved in collecting claims, the administration of the program was passable by American standards, and there was every evidence that the Japanese government's plan for idemnifying its citizens for death or injury from enemy attack was made in good faith, both as to what it believed to be a fair amount of coverage at reasonable cost to the insured, and intention and ability on the part of the government to settle claims. There was no comparable war casualty insurance plan in the United States.

2. *War Damage Insurance*. a. *Provisions*. The national law providing for insurance of property lost or damaged by acts of war referred to in this report as war damage insurance but known as the war risk insurance emergency measures act (Senso Hoken Rinji Sochi Ho), had already been written at the time the Japanese declared war on the United States, and was promulgated soon thereafter, on 19 December 1941. The act provided low-cost insurance for any object that could be insured under regular private fire and marine insurance policies, such as homes, business buildings, factories, ships, automobiles, and the like, as well as goods in transit. It excluded from coverage animals, plants, cash, securities and stamps. Property could be insured for 90 percent of its value at a rate of 8 yen per thousand per annum. It was necessary to renew policies each year. In June 1942 the premium was reduced to 6 yen per thousand; in November 1943 it was further reduced to 3 yen 50 sen; and, eventually, in April 1945 to 2 yen, at which time the amount of coverage was increased from 90 percent to 100 percent, and coverage was added for damage from earthquakes, tidal waves or volcanoes causing disaster during wartime. A final change in the rate of premium came on 1 July 1945 when a new scale of premiums fixed coverage of factories and warehouses at 4 yen per thousand, private dwellings valued at less than 50,000 yen at 8 yen per thousand, and dwellings worth more than 50,000 yen at 16 yen per thousand. For insurable objects it was possible to take out war damage insurance (except for precious metals, jewelry and art objects) whether or not those objects were also covered by a private policy with a fire and marine insurance company, but collection could be made, in case of war-caused damage, only under the national policy, not under both. Up until April 1944 it was possible to take out a private fire insurance policy on property without also having war damage insurance (except in certain of the largest cities in Japan), a procedure which many people followed, despite the fact that the private policies specifically excluded payment for loss caused by acts of war. At that time, however, it became mandatory throughout the country that all applicants for private policies also take out the government war damage insurance in the same amount and with the same company. All Japanese nationals in good standing could be issued policies, and there was no restriction as to the principal amount of the policy except that it should conform with the actual value of the objects insured. There was no loss-of-business insurance provided, and, in fact, there was a specific exclusion of liability for rent lost through the destruction of a house as the result of an air attack.

b. *Administration*. There were no essential difference in the national and local arrangements for administering the war damage insurance from those for war casualty insurance. Only the marine and fire insurance companies, however, issued the war damage policies; and the details involved were somewhat more complex. To cover their expenses in handling the insurance, the fire and marine companies were given a commission of 1 yen 50 sen for each policy issued and were permitted to retain 2 percent of the premiums paid. There was considerably more initial interest in the war property damage insurance than in war life and injury insurance, even though the former was announced earlier in the war when danger from enemy attack was more remote. Despite the greater attractiveness of the war damage insurance, national promotion campaigns were regarded by the government as necessary to increase sales. The private companies printed promotional leaflets under their own names, describing the insurance, and distributed them in large quantities. The successive reductions in premiums attested to the concern of the government that as large a number of persons as possible apply for the insurance.

c. *Policy Issuance Procedure*. If a person's house or other establishment were already privately insured, the procedure for obtaining war damage insurance was simple, since the valuation determining the principal amount of the war damage policy had already been established by company representatives. Where a person ap-

plied for war damage insurance alone, the companies claimed to have been too busy to make individual investigations, and accepted the applicant's evaluation based on the amount of floor space of the building to be insured, with a flat sum allowable per unit of area. In the case of a very large amount of such insurance, or where a house was known to belong to a wealthy individual and was presumed to have been built of especially valuable wood with elaborate landscaping surrounding it, a special investigation might be made and the insurable value revised upward. In late 1944 the government became alarmed at large-scale over-evaluation widely practiced, and cautioned the insurance companies against it. The increasingly chaotic state of the yen aggravated this problem so that, in June 1945, the government issued a detailed scale of values for assessing different kinds of buildings, still using amount of floor space as one determinant.

d. *Payment of Claims.* Within 30 days after the damage had occurred, a claimant was required to bring to the office of his insuring company his policy and a certificate of loss. The latter could be obtained from the nearest police station, from the city hall or from the leader of the block association (Chokai) in the area where the property was located. Upon the presentation of these documents, the companies would pay claims of less than 1,000,000 yen without delay or question beyond careful inspection of the supporting papers. Claims of 1,000,000 yen or larger on any one contract resulting from any one raid or bombardment were sent to the Ministry of Finance in Tokyo for approval. The companies were able to check on the accuracy of the amounts claimed by referring to current city maps showing damaged areas. Claims of 5,000 yen or less were paid in full in cash; but claimants for a greater amount were given 5,000 yen in cash, and the balance was deposited to the claimant's credit in a local bank under an arrangement known as a "blocked bank deposit" (Tokushu Yokin), drawing interest at the annual rate of 3.8 percent and available for withdrawal in 5 years. By special permission of the local branch of the finance ministry, part or all of the blocked funds could be released under one of the following conditions: (1) to pay taxes, (2) to settle a bank loan, (3) to relieve proven financial need for money to meet living expenses, and (4) to engage in new construction judged to be in the public interest. If an assured were deceased, proceeds from a policy might be paid to a relative, dependent, business associate or person living with him at the time of his demise. If the assured neglected his property or failed to defend it against damage by violating the air-defense law, all or part of the insurance amount might be withheld. The possibilities of disagreement between a claimant and a company were vastly greater than in the case of war casualty insurance, particularly with regard to partly damaged structures. In these cases the claimant was required to furnish an estimate of the cost of restoration made by a competent and reliable repairman. There was no case of disagreement between a claimant and a company on claims under 1,000,000 yen encountered in any Japanese city studied or known to national officials, which was not worked out between the two parties on the basis of a compromise. Rarely was it necessary even to call upon the referee services of the local control association. These officials explained that it is the nature of the Japanese citizen to accept a fraction of his claim rather than to fight for his rights in court. Even on the large claims referred for approval to the Ministry of Finance there was no claim, as of 27 November 1945, which had not been settled without recourse to the civil courts. As to the prompt settlement of claims, which was characteristic of private company operations, it was said to be a matter of pride in the efficiency of the several companies. The latter inserted notices in the daily newspapers setting up a schedule of claims-payment according to date of filing, so that the payment procedure might be efficient and orderly.

e. *Operations.* As of the time of this report, figures for the whole of Japan showing totals for the number of policies issued and for claims paid were not available from the national offices of the Ministry of Finance or the control association. The latter supplied such a table covering the Tokyo area:

Period	Policies issued	Principal amount
Jan.-Dec. 1942 (12 months)	105,369	3,259,420,000
Jan.-July 1943 (6 months)	129,599	3,461,216,000
July-Dec. 1943 (6 months)	223,259	5,219,212,000
Jan.-June 1944 (6 months)	482,357	9,273,210,000
July-Dec. 1944 (6 months)	872,741	24,791,667,000
Jan.-June 1945 (6 months)	1,243,001	41,174,508,000
July 1 to Aug. 15, 1945	255,428	6,521,758,000
Aug. 16 to Oct. 30, 1945	146,938	4,190,867,000
Total[1]	3,458,692	97,891,858,000

[1] Since policies were renewable annually, and the table covers a period of nearly 4 years, this figure does not show the total number of separate individuals taking out policies.

The figures in the above table are not directly comparable to those already presented for war casualty insurance, either on (1) number of policies, for a large number of the inhabitants of the city were tenants, and several pieces of property might be included under one policy, while conversely, there might be several members of a single household all having separate war casualty policies; nor (2) on the principal amounts of insurance in force, since, contrary to the case of war casualty insurance, the amount for which property might be insured was limited only by its official evaluation. Also, figures for the two types of insurance ran more closely parallel in Tokyo than in other localities. Officials claim that 90 percent of the buildings in Tokyo were covered by war damage insurance, and that it was the low incidence of policy issuance in other localities that caused the government successively to reduce premiums. A sample case of policy issuance and claims paid is presented in the following statistics from Nagasaki:

Period	Policies in force	Claims presented	Claims paid	Buildings destroyed[1]
Up to 31 July 1942	866	----	----	----
1 Aug. 1942–31 July 1943	4,327	----	----	----
1 Aug. 1943–31 July 1944	15,356	----	----	----
1 Aug. 1944–31 July 1945	27,523	162	162	476
1 Aug. 1945–31 Aug. 1945	22,983	2,173	2,173	20,063
1 Sep. 1945–1 Nov. 1945	20,493	17,132	10,852	----

[1] This figure covers all buildings destroyed, not just those covered by war damage insurance.

There are several interesting points to be noted in the above table. In a city of 284,000 people, there were only 866 war-damage policies in force 8 months after the war started, during which time the Doolittle raid on Tokyo has occurred. Up to the time of the atomic bomb all cases presented had been paid; and, thereafter, the companies were striving to settle atomic bomb claims against the handicaps of lost records, reduced personnel and difficulties in checking the accuracy of claims. The amounts paid were not available so that direct comparisons with Tokyo are not possible; nor did the Nagasaki insurance officials have the records of claims paid, few in number but great in amounts, on the extensive destruction to steel, shipbuilding and ordnance plants caused by the atomic bomb. It is noteworthy that against the figure of 20,063 buildings destroyed in August 1945, more than 17,000 claims were registered with the insurance companies, indicating a high percentage of coverage. It should be pointed out that all of these claims need not necessarily have been for houses, since the policy of a tenant would cover only his household furnishings. The promptness of payment evident in the Nagasaki table was characteristic of the operations of the fire and marine insurance companies throughout Japan in settling claims presented. The following table sets forth the settlement of claims in the Tokyo Metropolitan District:

Period	Claims presented	Claims paid			
		Number	Cash	Blocked bank deposit	Total
Jan.–June 1943	1	1	8,000	--------	8,000
July–Dec. 1943	----	----	--------	--------	--------
Jan.–June 1944	----	----	--------	--------	--------
July–Dec. 1944	1,399	869	2,047,000	3,091,000	5,138,000
Jan.–June 1945	712,241	625,575	2,198,841,000	5,421,793,000	7,620,634,000
July 1 to Aug. 15, 1945	155,724	188,838	616,624,000	1,628,553,000	2,245,177,000
Aug. 16 to Oct. 30, 1945	82,450	117,634	540,337,000	2,150,179,000[1]	2,714,516,000[1]
Totals	951,815	932,917	3,357,857,000	9,203,616,000[1]	12,593,473,000[1]

[1] Denotes inclusion of roughly 80,000,000 yen paid on claims presented to banks when the pressure of work on the insurance companies was relieved temporarily by the banks in August 1945. The latter passed on the claims, paid out no cash, but credited claimants with proper amounts in the form of blocked bank deposits.

The payment of 8,000 yen in 1943 represents the sole war damage claim resulting from the Doolittle raid of April 1942.

f. *Comments.* The fire and marine insurance companies welcomed the war damage insurance law, for although their policies specifically stated that they would not be responsible for losses caused by enemy action, they also excluded losses from earthquake, and there had been several difficult situations arising from the great earthquake of 1923. They felt that, without the national insurance, there would have been a great deal of trouble and many doubtful cases of damage, had not the government taken a hand in providing insurance protection during the war period. It will be noted from the tables of figures that, because of fear of pillaging and vandalism by the occupation forces, many persons were prompted to make application for new policies even after the Japanese surrender. This fear was not so great in Tokyo as in Kobe, Nagasaki and other cities, where the population was seriously alarmed by rumors, some of them

printed in the newspapers purporting to come from the emperor, to the effect that no private property would be respected by the conquering armies. In Kobe, where the fear was especially keen, policies were applied for in September 1945; but the national enabling law for the insurance was abolished on 1 November 1945. The greater interest in property insurance than in casualty insurance and the more adequate coverage for property than for life have been attributed to the low value placed on human lives by the Japanese. The Japanese themselves explain it, to use the statement of the president of the national fire and marine insurance control association, by saying that "people could save their lives by running away, but they could not take their property with them nor remove it from the path of bombs." The official statement as to the reason for setting up the war damage insurance program was given by government officials as being in the interest of equalizing the suffering among the people; but a study of the payments made indicated that a large percentage of the total money paid out under the war damage claims program represented very large contracts and that it went to compensate a relatively small part of the population. As far as the sincerity of the government can be judged by the provision of the war damage law, the generosity of its coverage, ease of application and claim collection, and its ability to cover its obligations, it would appear that the program was conceived and executed in good faith. Without inflation, however, and the printing of millions of yen, it is doubtful whether the achieved record of honoring claims could have been made. Whether this development was anticipated in the original drafting of the war damage act is a matter for conjecture. Private citizens and the owners of businesses, as well as private insurance officials, believed the program to have been fair and adequate; and, although among the common people in smaller communities there arose some doubt, toward the end of the war, of the government's ability to pay, this doubt was dispelled by the prompt settlement of claims. The fact that considerably less than half of the population carried the war damage insurance, whether on their homes or on their possessions, was attributable to disbelief in the probability of danger during the first part of the war; to the continued blind faith that, despite mass destruction in other cities, one's own city would escape attack, combined with that characteristic Japanese procrastination regarding any measure that one is not ordered to take; and to the fact that by the time the average city dweller was moved to take such action, his possessions had already been destroyed.

4. *War Service Allowance.* a. *Provisions.* On 20 December 1941, by imperial rescript, promulgated through the Ministry of Home Affairs, a straight compensation law was issued covering air-defense workers and specifically naming members of auxiliary police and fire units (Keibodan), air-watchmen (Boku Kanshitai), persons participating in air-defense training, medical personnel engaged in air-defense operations, persons effecting emergency fire-proofing or fire-proofing training, and those other persons who were not necessarily classified by connection with a specific air-defense activity or organization but who were designated as air-defense workers by the governors of the prefectures and who carried a card certifying to that fact. The law was known as the air-defense participants assistance act (Boku Jujisha Fujorei), but was always referred to by the Japanese as war service allowance and will be so designated in this report. The types of compensation, together with the range of amounts offered, depending on the type of air-defense work done, were as follows:

Type of compensation	*Range of amounts provided (yen)*
Medical and convalescent care	[1]Actual expenses
Permanent disability:	
Total incapacitation	700–1,500
Partial incapacitation resulting in loss of means of sustenance	500–1,000
Serious bodily injury, or disfiguring scars on the face of female	350– 700
Terminal lump sum (paid to persons not yet recovered from injuries after 1 year)	700–1,500
Death benefit (beneficiaries must be relatives)	500–1,000
Funeral expense	50– 100

[1] Each prefecture set forth a table of standards specifying allowable charges for various types of medical treatment and limiting the amounts that would be paid therefor.

There were no limitations except for the provision that any person eligible for remuneration under the law would not be paid unless he were fully covered and had already been paid under the war casualty insurance program, wartime disaster protection law (described below), or other government compensation plan; nor would payments be made in the event the claimant

were proved to have been injured while running away from the scene of action or to have suffered injury as a result of his own stupidity.

b. *Administration.* Full authority for the conduct of war service allowance operations was vested in the prefectural governors. The law stated that one-half of the compensation funds paid to air-defense workers in factories should be furnished by the factory owners and that actual payments be administered by the factories; also that monies paid to air-defense medical personnel be handled by city mayors. All other claims were handled by the peace preservation sections of the prefectural police bureaus.

c. *Payment of Claims and Operations.* It was necessary for persons eligible for payments, or their beneficiaries, to file their claims within 2 years of the first day on which they became so eligible. To collect under the law it was necessary to submit to the paying authorities an application for payment, a police-validated physician's certificate, and doctor's bills, if any. Despite the large number of casualties among persons officially engaged in air-defense throughout Japan only 1,574,919 yen had been paid out for the entire country by 30 January 1946, of which more than 1,000,000 yen was for Tokyo. Statistics from a few heavily populated and hard-hit prefectures follow:

Summary of funds disbursed under wartime disaster protection law up to 1 December 1945—selected prefectures

	Medical expenses	Disability	Death benefits, funeral expense	Total
Tokyo	17,522	2,000	1,069,800	1,089,322
Aichi (Nagoya)	2,594	----------	56,570	59,164
Osaka	7,661	2,165	24,810	34,639
Hyogo (Kobe)	288	----------	14,300	14,588
Hiroshima	796	----------	----------	796
Nagasaki	2,856	----------	2,640	5,496

Up until 15 November 1945 only 20 applications for compensation under the war service allowance law had been received in Nagasaki for the entire prefecture since the beginning of the war, 11 of which had been paid. No claims were honored in the case of atomic bomb casualties, on the ground that no one could have been engaged in air-defense activity since the city was not in an "alarm" status when the bomb fell. The three small raids on Kyoto produced nearly 200 casualties, but only one claim was entered and paid under the law, that of an air watchman. There was no appeal possible under the law, and the judgment of the prefectural officials, governed largely by the physician's report, ended any possible disagreement on the part of the claimant as to the amount he considered due him.

d. *Comments.* Because of the provision in the law making it possible for claims to be entered as long as 2 years after the date of casualty, it is not possible at this point to make an exact statement as to the extensiveness of the war service allowance operation, but the exceedingly small amount of activity observed in the responsible prefectural offices of the target cities studied, as well as the low national totals, makes it unlikely that the figures as they now stand will be essentially changed. Many eligible for compensation under the program will fail to apply for it. Even before the depreciation of the yen the indemnities granted were pitifully small, and the devaluation of Japanese currency was said by officials to have discouraged claimants from undertaking the effort involved in collection. Samples of actual cases in process of verification and payment in Nagasaki revealed an unbelievable amount of red tape connected with the settlement process, and physicians were said to have waived payment of their bills rather than make out all of the papers necessary for a claimant to collect from the government. Reimbursement under the wartime disaster protection law (see below), although slightly less favorable in its terms, was simpler to collect, and air-defense workers were automatically covered by that law along with all other victims of air attack.

5. *War Disaster Protection.* a. *Provisions.* Enacted on 24 February 1942, the wartime disaster protection law (Senji Saigai Hogo Ho), covering all Japanese nationals, was a combination relief and indemnity act which included several types of loss due to enemy action and war emergency. Not only were casualties to life and limb as well as property damage from disasters caused directly by the enemy (or resulting therefrom) specified in the provisions of the law, but compensation to owners of property expropriated for relief purposes was also included. This report will not be concerned with the direct relief aspects of the act, for these are covered in the report on Emergency Relief; but, in so far as money was payable for death, injury, medical expenses, funeral costs, or for government-expropriated property, the war disaster protection program is considered to fall under the topic of war damage claims. The amounts paid for death and injury corresponded roughly with those pre-

sented in the table given for war service allowance compensation, but the maximum sums were given to those persons killed or injured while engaging in emergency relief, minimum amounts to the average citizen victimized, and intermediate amounts to those victims officially engaged in other air-defense activities. Under the original law, compensation for total destruction of one's house was based on the value of the structure; and for partial destruction the extent of damage was determined by prefectural authorities, together with an estimate of repair costs upon which was determined the amount to be paid. The government did not expose itself to extensive liability, however, for no person whose annual earned income was over 7,000 yen, or whose annual independent income was over 3,000 yen, was entitled to collect wartime disaster compensation. The government further protected itself by providing that amounts received under war casualty insurance or any other government protection scheme would be deducted from any wartime disaster compensation payments. Household furniture destroyed was paid for according to the number of persons in a household, with a maximum of 500 yen liability assumed for any one household. On 17 May 1945, the extent of damage to Japan became so great that authorities were too pressed to be able to make investigations of minor damage, so the law was changed to provide a flat 1,000 yen payment for a house damaged beyond use, regardless of the value of the house, and no payment if the house could still be lived in. The question as to whether the house was still habitable or not was left up to the owner, who so certified this fact by a written statement. If the house were livable, payments would be made for furniture, if more than 50 percent of it had been destroyed, but nothing would be paid if less than this amount had been lost. The only limitations and restrictions placed on the receipt of payments under this program, besides the two mentioned (high income and money received under other government scheme for the same loss), applied to conduct of the candidate who wished to be paid. He would receive nothing if his disaster were the result of carelessness; if he opposed, without legitimate reason, investigation of his affairs made for the purpose of settling his claim; if he were guilty of disorderly conduct and extreme idleness; and if he were sentenced to 6 years or more of imprisonment and penal servitude. As to expropriation of privately owned buildings or commodities for relief purposes, the law gave full authority to the prefectural governors to seize and pay for whatever property they deemed necessary to meet emergency situations.

b. *Administration.* The governors of the prefectures were accorded wide latitude in executing the provisions of the wartime disaster law. They were empowered to dispense funds to such persons, and for such emergency purposes, as well as in such amounts as they might decide were necessary, regardless of the specific provisions of the law. In the welfare departments of the prefectures rested ultimate authority, in the name of the governor, over the payment of claims and the actual disbursing of funds. In the larger cities, claimants might present their papers to the welfare office of the municipal government, which assembled proof necessary for settling claims, and then passed their recommendations to the prefectures for payment by the finance offices.

c. *Payment of Claims and Operations.* A summary of claims presented, and the number paid, together with the amounts thereof, covering the entire country, is shown in a table on the following page. A breakdown by prefectures will be found on Pages 187 and 188. These figures were

Summary of claims presented and paid in Japan under the wartime disaster protection law

Period	Medical expenses			Total and partial disability			Death benefits		
	Claims	Paid	Amount	Claims	Paid	Amount	Claims	Paid	Amount
1 April 44 to 31 March 45	0	0	0	106	28	10,845	3,737	3,605	1,761,990
1 April 45 to 1 Dec.45	27	27	2,290	4,669	1,931	787,535	108,711	91,207	47,272,795

Period	Houses destroyed or damaged			Household effects		
	Claims	Paid	Amount	Claims	Paid	Amount
1 April 44 to 31 March 45	2,844	2,550	1,684,428	22,865	23,266	8,961,834
1 April 45 to 1 Dec. 45	187,109	144,487	77,345,565	973,800	746,059	349,412,428

supplied by the national welfare bureau and were claimed to be an accurate and complete account of the operations of the war disaster protection program. The dates used for assembling the figures make it impossible to check them for accuracy against findings made in the field studies, but by a process of interpolation they would appear to differ somewhat from statistics supplied earlier by certain individual prefectures. There is no trend, however, either of overstatement or understatement, so it is probable that discrepancies between the figures of certain prefectures independently obtained and those appearing for these prefectures in the national welfare department table may constitute revisions based upon rechecking of records, and that the discrepancies do not reflect "doctoring" of the statistics by the welfare ministry. Claims and payments for medical expenses were negligible, according to the national figures, with only 271 cases reported, indicating that, as far as the rank and file of the people were concerned, physicians and hospitals rendered few bills, or waived their payment, or that bills were paid privately or by some other form of insurance or compensation plan. The case is similar for total and partial disability, for, from 1 April 1944 to 1 December 1945, there were but 4,775 claims entered.

Summary of payments under wartime disaster protection law, 1 April 1944–31 March 1945

Prefecture	Total and partial disability			Death benefits			Houses destroyed or damaged			Household effects		
	Claims presented	Claims paid	Amounts paid	Claims presented	Claims paid	Amounts paid	Claims presented	Claims paid	Amounts paid	Claims presented	Claims paid	Amounts paid
Hokkaido	1	1	425	33	33	16,500						
Aomori				7	7	3,500						
Iwate				10	10	5,000	26	26	25,524	1,302	1,302	64,990
Miyagi				1	1	500	155	98	44,118	502	492	227,380
Akita												
Yamagata				2	2	1,000						
Fukushima				90	90	45,000	119	119	103,552	561	561	235,650
Ibaragi				43	42	20,990						
Tochigi				40	40	20,000	44	44	17,719	46	46	17,625
Gunma				64	64	32,000	755	755	254,373	936	946	301,200
Saitama	3	3	1,115	6	6	3,000						
Chiba				53	53	26,500	117	117	86,975	119	119	76,755
Tokyo				2,133	2,133	1,066,500	617	617	462,750	16,177	16,177	6,476,750
Kanagawa				27	27	13,500	6	6	5,888	20	20	8,385
Niigata				3	3	1,500						
Toyama	2	2	700	35	35	17,500						
Ishikawa				15	15	7,500						
Fukui				9	9	4,500						
Yamanashi				4	4	2,000	6	6	5,180	6	6	2,149
Nagano				35	35	17,500	13	13	13,500	927	927	485,400
Gifu				2	2	1,000	4	4	4,820	6	6	2,400
Shizuoka				212	212	106,000	57	57	53,523			
Aichi				90	90	45,000	86	86	86,050	125	125	487,646
Mie				14	14	7,000						
Shiga				2	2	1,000						
Kyoto				5	5	2,500						
Osaka	100	22	8,605	450	350	175,000	800	563	502,496	2,000	1,511	534,302
Hyogo												
Nara				2	2	1,000						
Wakayama				30	30	15,000	11	11	4,000	103	103	35,900
Tottori				9	9	4,500						
Shimane				12	12	6,000						
Okayama				6	6	3,000						
Hiroshima				2	2	1,000						
Yamaguchi				12	12	6,000	2	2	1,190	5	5	2,200
Tokushima												
Kagawa												
Ehime				16	16	8,000	11	11	3,144	14	14	5,012
Kouchi												
Fukuoka				52	52	26,000						
Saga				14	14	7,000						
Nagasaki				111	110	55,000	3	3	176	3	3	1,500
Kumamoto				61	31	15,500	3	3	4,500	3	3	1,590
Oita				16	16	8,000	1	1	1,280			
Miyazaki				9	9	4,500	8	8	3,670			
Kagoshima												
Total	106	28	10,845	3,737	3,605	1,802,490	2,844	2,550	1,684,428	22,865	22,366	8,967,934

NOTE.—No claims for medical expenses and terminal lump sum were presented to any prefecture during the period.

Summary of payments under wartime disaster protection law, 1 April 1945–1 December 1945

Prefecture	Medical expenses			Total and partial disability			Death benefits			Houses destroyed or damaged			Household effects		
	Claims presented	Claims paid	Amounts paid	Claims presented	Claims paid	Amounts paid	Claims presented	Claims paid	Amounts paid	Claims presented	Claims paid	Amounts paid	Claims presented	Claims paid	Amounts paid
Hokkaido				57	17	8,950	1,056	570	253,500	1,257	841	841,100	10,200	6,131	2,663,100
Aomori	15	15	999	176	176	88,000	463	457	258,500	947	935	935,000	8,821	5,100	2,550,000
Iwate				30	21	6,150	679	679	339,500	1,196	1,196	1,196,000	3,735	3,735	3,771,600
Miyagi				30	21	6,150	6,115	548	274,000	802	454	454,000	16,280	9,570	4,027,100
Akita							8	8	5,000	4	4	4,500	338	338	136,550
Yamagata							250	250	125,000	44	44	44,000	3,520	3,470	1,383,300
Fukushima				96	96	37,650	1,060	1,060	521,000	886	886	886,000	11,137	11,137	4,796,122
Ibaraki				8			261	141	705,000	470	321	321,000	4,823	4,700	250,750
Tochigi							2,310	2,310	1,160,000	836	836	886,400	12,991	12,991	5,841,480
Gumma	2	2	212				2,945	2,945	1,472,500	2,121	2,121	1,937,373	20,585	20,585	8,933,780
Saitama				34	27	8,750	1,554	820	799,000	1,523	898	886,860	13,806	8,008	3,395,596
Chiba				52	52	28,750	2,213	2,213	1,106,500	1,171	1,171	1,160,378	9,546	9,546	3,868,570
Tokyo							24,777	24,777	12,388,618	72,065	72,065	5,044,879	146,360	146,360	65,744,050
Kanagawa							2,058	2,058	1,029,000	1,821	1,821	1,821,000	37,179	37,179	15,726,760
Niigata				20	12	5,600	424	240	189,700	484	197	196,500	5,201	1,591	696,090
Toyama				18	10	5,050	425	410	205,000	428	343	332,040	4,578	3,662	1,609,400
Ishikawa							153	59	29,000	116	28	28,000	2,481	809	306,000
Fukui				6	4	1,550	341	89	47,200	1,207	170	170,000	8,598	1,978	848,000
Yamanashi				31	20	6,900	1,022	852	499,500	1,638	1,32	1,328,000	16,307	13,452	5,934,400
Nagano							1,118	1,118	559,000	531	531	531,000	1,215	1,215	4,590,380
Gifu				355	70	42,300	1,347	321	160,500	3,172	1,270	1,270,000	21,512	8,377	2,281,551
Shizuoka				96	9	4,250	4,970	3,512	1,756,000	4,974	3,924	3,905,050	33,203	24,970	11,331,320
Aichi				330	328	131,235	4,370	4,370	2,185,000	6,524	6,424	6,424,268	11,654	11,654	34,962,000
Mie							541	134	67,000	882	116	116,000	6,462	1,531	649,850
Shiga	10	10	1,079	10	10	3,500	263	263	131,500	153	153	152,500	5,791	5,791	2,133,550
Kyoto				8	8	2,250	352	179	91,500	167	122	123,738	7,041	4,540	1,850,360
Osaka				1,000	15	5,730	7,500	1,633	1,037,394	500	1,502	1,515,540	150,000	71,005	30,738,567
Hyogo				540			1,606	876	553,500	581	581	494,800	72,055	25,885	15,862,319
Nara							201	201	100,500	73	73	74,339	6,434	6,434	2,790,875
Wakayama							514	514	257,000	3,930	3,920	3,927,000	18,284	18,284	3,440,880
Tottori				7	7	2,950	122	122	73,770	340	34,000	3,047	3,047	3,047	1,249,310
Shimane				1	1	350	44	44	2,200	26	26	26,000	690	690	344,550
Okayama				243	243	88,550	1,920	1,920	960,000	2,327	2,327	2,327,000	25,398	25,498	12,232,050
Hiroshima							25,744	25,744	12,872,000	18,725	18,725	18,725,000	42,049	42,049	16,553,000
Yamaguchi				2	2	1,000	75	75	69,000	2,115	2,115	2,108,200	11,247	11,247	5,426,240
Tokushima				678	678	203,850	1,221	1,221	610,500	2,798	2,330	2,332,000	38,790	35,260	9,713,600
Kagawa				35	28	28,000	1,527	1,002	660,500	1,011	382	382,000	25,651	20,764	10,064,400
Ehime				30	1	500	1,382	1,110	550,000	4,147	3,931	3,931,000	27,642	13,093	5,650,900
Kochi				108	96	39,600	753	676	388,000	1,647	1,564	1,564,000	13,093	13,909	5,650,900
Fukuoka				54	54	1,640	3,800	3,800	1,900,000	4,849	3,674	3,673,400	48,494	42,501	12,750,572
Saga				2			435	84	55,500	597	386	386,000	4,049	291	557,480
Nagasaki				13	8	29,850	126	113	5,613	23	15	150,000	185	152	76,300
Kumamoto				12	12	4,650	799	799	399,500	3,093	2,857	2,587,800	10,924	10,363	4,823,000
Oita							655	655	327,500	656	656	656,000	5,093	5,093	2,292,200
Miyazaki				70			850	234	117,500	2,950	879	879,000	13,600	3,746	1,726,300
Kagoshima				547			3,625			26,176			37,275	27,752	12,053,826
Total	27	27	2,290	2,290	4,669	787,535	113,974	91,206	47,317,795	186,483	144,486	77,038,565	973,680	724,667	344,283,928

NOTE.—No claims for terminal lump sum were presented to any prefecture during the period.

Considering the fact that there were thousands injured in Japan during this period, many who were eligible for this compensation filed no claims and are, therefore, not represented in the figures. On the basis of the average amount paid per claim and the depreciated state of the yen, this low figure is not surprising. The death benefit totals correspond more closely to what one would expect in the light of known casualties, for there were 108,711 death benefit claims registered after 1 April 1945, 94,207 of which had been paid in the amount of 47,272,795 yen. Similarly, the figures for houses destroyed or damaged come close to expectation with 187,109 claims entered after 1 April 1945, 144,187 of which had been paid in a total amount of 77,345,565 yen. By far the greatest activity is seen in the claims for the destruction of household effects, with nearly 1,000,000 claims presented, 746,059 of which were paid at a total cost to the government of 349,412,428 yen. There was no case of expropriation of private property under the terms of the war disaster protection law, for in no instance did any prefectural governor find it necessary to exercise the powers accorded him for this purpose.

d. *Comments.* For all of the personal indemnity features of the wartime protection program, including medical expenses, disability and death, the government had paid out 49,940,755 yen as of 1 December 1945. No terminal lump sum payments had been made under the law, mainly because persons who became eligible to receive them could not make application for them until one year after the injury involved had occurred. National officials stated that, in their opinion, the figures supplied represented nearly all the liability for which the government would be responsible. Thus, it is interesting to note that as of 1 November 1945, one month earlier, the government had already paid out for war casualty insurance the sum of 122,797,827 yen, or two and one-half times as much for the same type of coverage. As of the same date in the Tokyo Metropolitan District, the figures stood at 13,455,118 yen for the wartime disaster protection compensation and 61,477,294 yen for the war casualty insurance payments. A comparable relationship between the two programs was true of other localities. As to property damage, the government had paid out 426,757,993 yen on wartime disaster protection as of 1 December 1945. National totals for war damage insurance were not available. Using the Tokyo figures for comparison a considerable difference between the two programs is evident; for, whereas the wartime protection compensation had paid only 72,214,800 both for houses destroyed or damaged and household effects destroyed as of 1 December 1945, more than 12.5 billion yen had been paid for war casualty insurance as of 1 November 1945 for the same type of loss. Officials of the finance Ministry affirmed that while the Tokyo figures showed the war casualty insurance to have been nearly 175 times as important as the free wartime disaster compensation from the standpoint of actual money involved, the relative difference would not run as high in other localities. On the other hand, it was claimed by these officials that from the standpoint of civilian protection, particularly as it applied to the common people, the difference in the sums of money involved did not reflect government intentions to give preferential treatment to those who had the most to lose financially from enemy attack, or who were in a more favorable position to pay for the protection offered. Judging from the basic provisions of the two laws setting up these programs there is reason to question the complete veracity of this claim.

6. *Compensation under the Firebreaks Program.* a. *Types and Determination of Amounts.* The extensive demolition of buildings for the purpose of creating firebreaks, more fully reported in the Fire Section of this report, constituted an important war-cause damage claim for which the Japanese government made itself responsible. Four types of compensation were offered: (1) payment for buildings and land, (2) rental of land, (3) funds for moving one's possessions, and (4) compensation for loss of business. In all of these, there were slight variations as to exact amounts paid out in the various prefectures. Standards were set up for the assessment of buildings to be demolished, and according to those, the owners were paid the full amount of their value. If an owner wished to keep the materials after demolition, a lesser amount was paid. The land might be either purchased or rented by the city. Cost of moving was determined by the distance a dispossessed owner was required to transport his belongings, by the amount of goods to be moved and by the equipment the owner might possess for effecting the movement. The loss-of-business compensation was determined by the earning ability of the indi-

vidual, the annual profit of his business, and his financial necessity.

b. *Operations.* Upon their eviction, owners of houses and business structures condemned for demolition were paid 3,000 yen (if the buildings were worth that much) as an initial payment. The remainder of the compensation due was paid in the form of a blocked bank deposit payable in 5 years, and drawing interest at 3.8 percent per annum. Rental of land was paid annually, and the moving and loss-of-business compensations were paid upon application. At the termination of the survey, progress in the payment of claims among the five major Japanese cities studied varied from 6 months behind in Kobe to completion of payments in Tokyo. As a sample of the cost to the government involved in the claims arising from the firebreaks program in one city, the completed figures for Tokyo for its six operations extending from 26 January 1944 through April 1945, are as follows:

Item	*Amount spent (Yen)*
Planning and supervision	7,816,883
Cost of removal of buildings	183,205,140
Compensation for buildings	1,468,450,895
Land bought	675,758,696
Land leased	7,755,423
Compensation for moving expenses	98,717,000
Compensation for loss of business	320,347,987
Cost of putting land in order	4,569,560
Cost of building roads	148,326
Total	2,766,769,910

Of the 614,698 buildings demolished in the entire country 214,203 were in Tokyo. There were 19,378 in Kyoto, 82,508 in Osaka, 22,229 in Kobe, and 8,341 in Nagasaki, with comparable figures in other cities. Even considering its larger population, the effort and money expended in Tokyo were out of all proportion to its size; and, as observed in other defense measures, it will be seen that funds were not spared in the effort to provide the greatest possible protection for the capital city of Japan.

7. *General Observations.* a. Looking at the entire war damage claims program as a whole, the laws and their operation both for damage to life and limb and to property, the general impression is that the Japanese government intended to set up adequate financial protection for its citizens against possible destruction by enemy attacks. Leaving aside for the moment the question of the adequacy of coverages provided, even by Japanese standards for evaluating life and property, the basic laws reflect sincere and comprehensive planning. Many of the benefits contained in the laws of other countries were not found in Japan, but the provisions of those which were offered must be judged in the light of the previously existing social security measures of that country. While there may be extenuating circumstances yet undiscovered, it would seem significant that, whereas a complete plan for a government-financed property insurance policy was ready for the public in December 1941, it was not until March 1943, or 15 months after hostilities began, that a similar policy for life and limb was issued.

b. Administratively, the two insurance programs were better executed than the two compensation operations, for the following reasons: (1) the personnel of the insurance companies which carried out these programs were of a higher type than those in public office; (2) the laws establishing the programs and setting up procedures for handling claims were more clear-cut, less loaded down with technicalities; (3) there was more at stake financially, both for the administrators of the program and for the beneficiaries; and (4) there was more public knowledge of the insurance programs. Officials in several of the cities studied were perplexed as to why there had not been a greater number of compensation claims presented to them by people known to be eligible for payment under either the war service allowance or the war disaster protection plan; considering, however, the red tape involved in collecting the small benefits, and the fact that many people did not know of benefits to which they were entitled, it is not surprising that the compensation plans failed to reach all those for whom they were intended. Prefectural officials, although surprised, did not seem to be particularly concerned about this situation. The initial reception by the public of the several indemnity measures enacted was due to the complete disbelief that there would ever be any use for them. Efforts of the government to propagandize the insurance policies made little headway against assurances from the army, even after the tide of the war had turned against it, that Japan would never be subjected to seriously damaging attacks from the air. The initial reception by the insurance companies was claimed by them to have been a favorable one because of patriotic motives. Prefectural officials declined to express a personal judgment, constructive or

otherwise, regarding the details of the compensation program.

c. Attempts to sound out the attitude of the public on the adequacy of the coverages provided by the insurance and compensation plans were futile, for the Japanese interrogated had no opinion one way or the other, except to state that the amounts were deemed adequate by the emperor under whose name they were published, and thus there was no further cause for discussing them. Rumors that the government would be unable to meet its obligations began to circulate after the heavy mass raids on the larger cities, but it was said that these never reached serious proportions because of the continuance of payments and because the spreading of such rumors was considered to be a treasonable act. After the atomic bomb, both private insurance men and prefectural officials in Nagasaki admitted apprehension over the government's ability to pay. The cataclysmic and revolutionary nature of the calamity there made many people believe that they might not be covered by any of the financial protection plans. The unusual character of the atomic bomb attack was reflected in the prefectural decision not to pay under this law any air watchman, auxiliary police and fire personnel, medical defense workers and others covered by the war service allowance law, a privilege they normally would have enjoyed; but that their passive role in the situation entitled them only to the benefits of wartime disaster protection.

d. There is some reason to doubt whether the generous terms of the war damage insurance would have been issued had the huge losses that were eventually sustained been anticipated. To be sure, the rate of premium for this insurance was reduced even after the mass destruction began, but by that time the government was printing money in considerable quantity and, at inflation prices, it could well afford to settle all damage claims. One of the most characteristic aspects of the entire program was the almost complete absence of appeal, both in the provisions of the law and in the operations. Private insurance officials were quite sanguine on this matter, insisting that the private individual could always have recourse to the civil courts if he could not get satisfaction from the insurance companies and the control associations. They admitted, however, that his chances of success were small. In the compensation laws there was no provision for appeal whatsoever.

e. As the insurance and compensation programs worked out, there appeared to be general satisfaction on the part of both officials and the public. National finance ministry officials were sufficiently pleased to state that, were the entire operation to be done over again, they would not regard it necessary to introduce any major alterations.

VIII. TRAINING OF CIVILIAN DEFENSE PERSONNEL AND OF GENERAL PUBLIC

A. Civilian Defense Personnel

1. *Introduction.* a. As a result of the use of airplanes as implements of warfare in World War I, Japanese military and civilian officials began discussions soon after that war as to what should be done in preparation for defense against attack from the air. From 1918 to 1928 nothing positive was done in the development of a civilian defense training program, although government publications, newspapers, and magazines published articles dealing with the problems of defense against air attack. From 1928 to 1937, the government attempted to encourage public interest in those phases of defense against air attacks in which it was bound to play a large part, namely, light control, gas defense, and first aid. The efforts of the government were confined entirely to the industrial and densely populated areas. Classes were held to which the public was invited and several times a year large-scale air-raid drills were held in conjunction with army maneuvers. The response of the people was lethargic. Most of them considered the drills either a wonderful spectacle or an effort by the military to sell itself more readily as the real authority of the nation. From 1937, with the enactment of the National Air-Defense Law, more definite plans were prepared for training civilian defense personnel.

b. All directives on training emanated from the Ministry of Home Affairs, although they first had to receive the approval of the Ministry of War. The directives were forwarded to the governors of the prefectures whose responsibility it was to carry them out. The indefiniteness with which the directives were written, permitted the prefectural governments to determine the proce-

dures and methods of training, the type and number of schools necessary, and the length of training periods, all of which resulted in varied training programs. The first directive in 1937 stated that all families should be trained in light control and fire-extinguishment methods, but suggested that training also be conducted in rescue, first aid and emergency relief, gas defense, evacuation, and shelter construction. The government officials and the public at this time were not at all enthusiastic about civilian defense, so that only very informal training programs were established, and it was not until late in 1942 and the beginning of 1943 that organized training programs and schools were started in the prefectures. Additional directives and amendments were issued, which attempted to change training programs and instructions as new information became available, but they fell far short of accomplishing their purpose because of the censorship and the over-optimistic war news given out by the military.

2. *Organization of Training Schools.* a. *National Air-Defense School (Boku Gakko).* This school was established in Tokyo for the definite purpose of training selected police, fire and organizational leaders from all over Japan in the principles of air-raid-protection services. The school was financed and conducted by the Ministry of Home Affairs. The personnel attending each session of this school was selected on a quota basis established by the training section in the general affairs bureau of the Air-Defense Headquarters (Boku Sohombu). The length of each session was about 7 days and the material presented was similar to that of the air defense schools conducted by the Great Japan Air-Defense Association.

b. *Great Japan Air-Defense Association (Dai Nippon Boku Kyokai).* This association was formed in 1934 and, although not an official division within the Ministry of Home Affairs, it actually represented and carried out the training policies advocated by that ministry through the establishment of training schools in each prefecture and through the printing and distribution of pamphlets on all phases of civilian defense upon their approval by the Ministry of Home Affairs. This organization was financed by a subsidy from the national government and by dues collected from the members. The funds were used principally to finance the schools established in the prefectures, but often it was necessary for the prefectural governments to appropriate additional sums to keep the schools operating. The schools were not standardized as to length of training sessions or methods of instruction, but they did provide training in the same general civilian defense subjects, principally light control and fire-extinguishment methods, a lesser degree of training in rescue, first aid and emergency relief, factory air-raid protection, shelter construction, and a still lesser degree in gas defense. (Pages 193, 194 give daily schedules and training subjects of typical prefectural schools.) The instructors were generally police and organizational leaders who had attended the national air-defense training school at Tokyo, conducted by the Ministry of Home Affairs, and certain specialists, such as medical personnel, to handle specialized subjects. In a few areas, army personnel were asked to give lectures on different types of bombs and their capabilities. All instructors not regularly employed in civilian jobs by the prefectural governments were compensated for their services. In some instances, one or two full-time instructors were appointed and paid on a yearly basis. The principal function of these schools was to train leaders of organizations engaged in civilian defense duties. The organizations which sent individuals to the schools assumed the financial responsibilities involved, but at times were aided by appropriations from the Great Japan Air-Defense Association branches organized in the prefectures.

c. *Great Japan Fire-Defense Association (Dai Nippon Keibo Kyokai).* This organization was established in July 1927, under the name of Great Japan Volunteer Fire Department Association (Dai Nippon Shobokumi Kyokai) for the purpose of coordinating and training volunteer fire associations. The organization adopted its present name in 1939. The Minister of Home Affairs was the president of the organization, and the governor of each prefecture was the head of the branch school set up in each prefecture. The work of the organization since 1939 had been coordinated with the Great Japan Air-Defense Association. It was responsible, under the supervision of the Great Japan Air-Defense Association, for the training of the fire-fighting leaders of the auxiliary police and fire units (Keibodan) and its components, subsections (Bundan) and fire arm (Shobobu). This training was provided in conjunction with schools conducted by the Great Japan Air-Defense Association or at

GENERAL AIR-DEFENSE TRAINING DUTY CHART—AIR-DEFENSE SCHOOL

Day/ Hour	1st day	2d day	3d day	4th day	5th day	6th day	7th day
0800		Manufacturer's air defense	Factory air defense	Gist of air-defense law	Rescue and first aid	Summary of observation nets	Emergency (temporary) reconstruction
0900							
1000	Initiation ceremony	Anti-bomb	Air-defense security	School air defense	Camouflage	Shelter (temporary) (Small). Instruction as to how to make shelter	Examination (test)
	Morale training						
1200							
1300							

DINNER

1400	Interpretation of air raids	Rescue and first aid	Evacuation of city	Practical fire fighting training	Practical gas-protection training	Study tour of air defense facilities	Commencement exercise
1500	Lecture on air defense		Light control (blackout)				
1600	Distribution of material for emergency use	Fire fighting and fire extinguishing	Air-defense construction				Dismissed
1700							
1800							

SUPPER

2000	Bath	Self-study	Discussion	Self-study	Bath	Criticism (discussion)	

AIR-DEFENSE SCHOOL (BOKU GAKKO)

Schedule of classes and subjects—Police, Fire, and Auxiliary Police and Fire Unit Section

Date/Hours	0800–1000	1000–1200	1200–1300	1300–1500	1500–1700
1st day	General air defense	Fire prevention and extinguishing	Lunch	Fire prevention and extinguishing	Fire prevention and extinguishing, practical training
2nd day	General air defense	Decontamination	Lunch	Rescue and relief	Rescue and relief, practical training
3d day	Family air defense	Shelter construction and taking cover	Lunch	Light control	Shelter construction and taking cover, practical training

Factory Defense Units and Air-Defense Section of Block Association

0800–0900	0900–1000	1000–1100	1100–1200	1200–1300	1300–1400	1400–1500	1500–1700
4th day: Family air defense	Light control	Decontamination rescue and relief	Shelter construction and taking cover	Lunch	Fire prevention and extinguishing	Rescue and relief, practical training	Fire prevention and extinguishing, practical training

schools solely established for fire-fighting training. In addition, it prepared and distributed to the auxiliary police and fire units literature on the prevention and extinguishment of fires; tested and recommended types of fire equipment; and aided in the repair of equipment used by the auxiliary police and fire units.

d. *Prefectural Police and Fire Department Schools (Keisatsubu Shobobu Gakko).* These were the established schools in each prefecture for the peacetime training of police and fire personnel. They were geared during wartime to train personnel in the added duties of air-raid protection. The schools gave particular emphasis to the training of guard rescue units (Keibitai) and auxiliary police and fire units (Keibodan) because of the police functions of those two organizations.

e. *Auxiliary Schools (Hoshu Gakko).* Certain conditions, such as distance from the school, lack of transportation, and wartime working conditions often prevented many leaders from at-

Daily Training Schedule at the District Aircraft Spotter Training Center

	First day	Second day	Third day	Fourth day	Fifth day	Sixth day	
0800		General aircraft spotting-also observation with naked eyes and training methods (regular instructors)	Recognition of aircraft and their capabilities (Army instructors)*	Simulated training in aircraft spotting and other matters. (Army instructors)	Weather observation (regular instructors)	Direction and execution of training plans (regular instructors) (leaders)	TESTS
0900	Organization of units						
1000							
1100	Opening ceremony Orientation	Aircraft spotting with binoculars and training methods. Also care and handling of binoculars (regular instructors)		Aircraft spotting and recognition*	Reports, communications and training methods. Also repairs of communication equipment (leaders)	Part instruction in type of condition	Supplementary training (regular instructors) (leaders)
1200	DINNER	DINNER	DINNER	DINNER	DINNER	DINNER	DINNER
1300							
1400	Duties, methods of instructions (regular instructors)	Listening with naked ears also training methods (regular instructors)	Same as forenoon Altitude estimation and training methods (regular instructors)	Practical training (combined). Separate altitude and direction finding (Army instructors) (regular instructors) (leaders)	Same as before dinner Directing and execution of training plans (regular instructors) (leaders)	Example of location of observation post. Under war time condition (regular instructors)	Arrangements and clean-up Closing ceremony
1500							
1600	Vigilance unit and essentials in instruction (regular instructors)	Aircraft recognition and training methods (leaders)	Determination of direction and training methods (leaders)				
1700							DISPERSAL
1800	SUPPER	SUPPER	SUPPER	SUPPER	SUPPER	SUPPER	
1900	Explanation of film on aircraft spotting (regular instructors)	Practical aircraft spotting in dim light (regular instructors and leaders)*	Aircraft recognition during day or in light and training methods (leaders)	Planning for altitude and direction finding instructions. Setting up of exercises	Silhouette recognition and training method (regular instructors)	Questions and answers and voicing of opinions (regular instructors) (leaders)	
2000							
2100	Self study	Planning for aircraft spotting instructions and setting up of exercises	Planning for aircraft identification instructions and setting up of exercises	Self study	Self study		

NOTES:

1. On the third day, simulated training in aircraft spotting will be conducted for approximately one hour at dawn.
2. Combined training will be executed in aircraft spotting on the fourth day under Army supervision with a height finder on hand.
3. Schedule marked * may be changed according to weather conditions.

tending the classes of the main air-defense school. This situation was remedied by holding classes in the late afternoons and evenings in police and fire stations more readily accessible to the volunteers. This program also made it possible to reach greater numbers of the leaders of auxiliary police and fire units, factory air-raid-protection groups, block associations, and neighborhood groups. The classes were usually 3 hours in length and met on three consecutive days.

f. *Air-Defense Observation Corps School (Boku Kanshitai Gakko).* This school, although part of the civilian defense training setup under the Ministry of Home Affairs, actually was the responsibility of the Ministry of War, as the training program was military and the instructors were either military personnel or civilians who were under military control. One of these schools was established in each of the army districts throughout Japan, of which there were six, and in addition, a school was organized in each prefecture. Each one of these schools at regular intervals conducted a seven-day training period during which students were trained to recognize aircraft by use of silhouettes, moving pictures and actual aircraft. They were also trained to determine altitude, speed, and direction of flying aircraft, and were taught proper procedures of reporting information. (See Page 194 for daily schedule and training subjects of one of the district schools.) Many graduates of these schools in turn trained other volunteers who found it impossible to attend the regular training sessions.

g. Refer to Page 191 for a chart showing the governmental agencies and volunteer organizations responsible for civilian defense training.

B. General Public

3. *Introduction.* The groundwork for acquainting the public with the effects of aerial warfare and the part which the general public might be called upon in defense against it was begun shortly after World War I by publication in newspapers and magazines of pictures and descriptions of raids carried out in the European theater of that war, together with articles which attempted to predict the future of aerial warfare. It was not until about 1930 that the government initiated programs in which small groups of the public were used to demonstrate how the people could cooperate in the defense of the country. These programs were concentrated in the principal cities and consisted of demonstrations in light control, first aid, gas defense, and fire fighting. The drills were generally coordinated with army air-defense maneuvers. As the situation with China became intensified and the possibility of entanglement with Russia became serious, more stress was applied to developing a realistic attitude on the part of the public toward civilian defense. All of these efforts culminated in the passage of the Air-Defense Law of 1937. The first directive, on the basis of that law, related to training and called for the instruction of the public in light control and in putting out incendiary bombs. Amendments gradually increased the field of training to include first aid, emergency relief, and construction of shelters. All of the normal methods, such as the press, magazines, radio, posters, motion pictures, and pamphlets were employed to present the problem to the public. The entire program, however, was constantly hindered by the long periods of freedom from air raids and the reports of military authorities on the progress of the war.

4. *Principal Agencies.* a. *Neighborhood Groups (Tonari Gumi).* This organization, established in 1938, became the principal agency for the development of self-protection from the effects of air raids and was also the basis for initiating cooperative efforts. (For a detailed description of the organization refer to that section of this report). Since every family, with all of its members, was practically compelled to assume membership in the organization, the authorities could allocate civilian defense responsibilities and duties to every individual in Japan. Each person, including children, was given training in light control, fire fighting, first aid, emergency relief, emergency shelter construction and responsibility for the aged, infirm and children. Particular emphasis was placed upon the training of each individual householder to control incidents which directly affected him and, when that became impossible, to call on his neighbors for help. All of this civilian defense training was summarized at regular meetings by leaders of the group who had been trained at schools conducted in the local police stations. In addition, members of the auxiliary police and fire units (Keibodan) and of the regular police and fire departments often attended the meetings to present lectures and demonstrations. Further information was made available at the meetings by a display of

civilian defense pamphlets which members were requested to examine and purchase to supplement the lectures and demonstrations. The quality of leadership and pride in family community cooperation were responsible for the very high percentage of attendance at these meetings.

b. *Great Japan Air-Defense Association (Dai Nippon Boku Kyokai).* This organization, as previously described, played an important part in presenting civilian defense responsibilities, duties and information to the public through its publication and distribution of civilian defense pamphlets which had been prepared and approved by the Ministries of War and Home Affairs. In addition, it developed and made available for public showing films demonstrating the principles of first aid and methods of extinguishing incendiary bombs.

5. *Means of Disseminating Air-Raid Defense Information.* a. *Pamphlets.* The distribution of pamphlets was one of the most important methods of presenting civilian defense information to the public. The Great Japan Air-Defense Association printed and distributed the pamphlets. Its local leaders displayed the pamphlets at organizational meetings and asked members to request those they desired. The requests were consolidated and forwarded to the air-defense school in the prefecture which obtained the pamphlets from the Great Japan Air-Defense Association. In most cases, the pamphlets had to be purchased by the individual at prices ranging from 5 to 50 sen each. Some of the prefectural governments reprinted a few of the general subject pamphlets and made them available, free of charge, to those families for whom their purchase would be a hardship.

b. *Press.* Newspapers were used on a wide scale to issue information and instructions about air-raid-protection matters. All details regarding practice air-raid drills were furnished the people through this medium. Editorials quite often pointedly referred to the good features and failures of such drills. In addition, the newspapers in certain areas reprinted government civilian defense pamphlets and made them available to the public.

c. *Radio.* Governmental and civilian defense officials presented series of lectures on air-raid-protection duties. In addition, from late 1944, broadcasts emphasized the great necessity for the people to maintain a high morale and strong fighting spirit.

d. *Films.* With the approval of the government, the Great Japan Air-Defense Association produced films on first aid, extinguishing incendiary bombs, and emergency shelter construction. These pictures were shown to the public only during 1944. In some communities a small admission charge was levied and in others the theater owners were reimbursed by the Great Japan Air-Defense Association.

e. *Magazines.* Nearly all varieties of the more popularly priced magazines were used extensively during the fall of 1943 and throughout 1944 to portray pictorially the different phases of civilian defense, emphasizing first aid, methods for combating incendiary bombs, and construction of shelters.

6. *Comments.* a. At the national and prefectural levels much time was spent upon planning and preparing directives on training (hampered by the overlapping authority and jurisdiction of the different bureaus); but all training was based on the false conception of the magnitude and intensity of air raids which might be made upon Japan. This misconception, together with the optimistic statements of military authorities and the rigid control exercised over the press, negatived to a large extent the effect of the training program carried to the Japanese people through the neighborhood groups, block associations, and auxiliary police and fire units. Even the Doolittle raid which depicted the possibility of future enemy air action was played up by the press as indicative of the type of raid which might be expected. As the military situation took a more serious turn upon the fall of Saipan and the coming of the heavy B–29 raids, the government was unable to revise its program, perhaps because it did not wish to lose face by admitting the seriousness of the situation but more likely because of the shortage of time, equipment and materials.

b. The training of the individual in self-protection and the feeling of confidence engendered by the cooperative efforts of small groups, such as the neighborhood groups and block associations, was the basic foundation of Japanese civilian defense.

c. Very little use was made of personnel experienced in the field of instruction and visual education, or of practical training and demonstrations.

d. The training program was further hampered by the heavy drain upon man power by

military requirements (no exemptions from the military draft were permitted) which prevented civilian defense organizations from reaching their full strength and often resulted in the loss of trained leaders.

e. The entire training program was geared to function under small-scale attacks, and it functioned well under such conditions, but could not stand up under saturation attacks.

f. The willingness of the Japanese citizen to learn civilian defense techniques varied with the quality of his leadership and instruction and with the intensity of the raids. With the approach of heavy raids, interest in training increased but it was later supplanted by a feeling of resignation as the saturation raids overwhelmed all efforts at defense.

IX. EXHIBITS

EXHIBIT A–1

Air-raid casualties and property damage in Japan, by prefectures

	Type of bomb		Casualties			Building damages				
	*Explo	*Incend	Dead	*Serious injured	*Sligh. injured	*Tota. burned	Par. burned	*Tota *Demo.	*Par *Dama	*For fire
Hokkaido	428		1,276	518	324	4,802	19	831	1,189	
Aomori	2,157	52,307	1,494	240	367	15,577	17	192	387	
Iwate	6,700	3,380	728	452	232	4,346	71	556	988	
Miyagi	1,119	1,951	1,173	1,900	9	12,328	319	63	93	
Akita	1,353		123	49	77	38		56	87	
Yamagata	180		78	25	41	84	15	4	14	
Fukushima	1,926	7,027	499	257	301	1,268	67	241	351	5
Ibaragi	3,012	220,089	1,789	1,130	1,257	26,878	255	965	1,231	
Tochigi	432	9,727	668	358	996	10,943	118	401	130	
Gumma	2,884	301,234	974	484	971	14,338	179	288	489	
Saitama	2,241	40,524	528	180	888	5,432	97	163	249	
Chiba	6,047	95,453	1,438	774	995	20,876	285	265	565	
Tokyo	11,436	419,380	88,204	19,597	51,469	765,815	3,050	4,021	5,163	
Kanagawa	6,970	568,377	6,204	2,926	12,021	143,934	460	990	1,302	6
Niigata	30		809	412	1,694	11,325	78	11	10	
Toyama	8		2,232	456	3,390	22,766	25	42	255	
Ishikawa	27	8	4	60						
Fukui	30		74	43	77	1		6	21	
Yamanashi	121	48,409	930	363	1,037	18,489	191	29	11	14
Nagano	26	798	37	35	19	78		28	30	
Gifu	696	402,393	1,233	524	981	26,133	357	385	923	5
Shizuoka	7,327	459,856	5,679	2,111	9,178	70,551	1,811	4,060	6,434	
Aichi	10,766	993,626	11,279	5,706	8,745	159,334	4,948	9,046	9,711	7
Mie	3,005	111,181	3,067	2,581	1,637	35,662	966	1,788	1,778	114
Shiga	327	2,554	59	57	184	34	6	16	25	
Kyoto	277	3,516	227	205	367	77	20	120	240	7
Osaka	767	67,660	13,236	7,179	18,626	352,713	4,992	8,218	7,342	
Hyogo	8,011	347,106	12,235	6,317	16,588	180,345	2,478	6,787	6,954	
Nara		3,033	73	86	156	89	33	11	7	5
Wakayama	1,285	4,113	1,932	1,903	3,633	28,369	71	1,220	1,048	
Tottori	42	5	80	61	31	29		2	23	
Shimane	90		52	32	58				7	
Okayama	1,262	50,670	1,709	351	524	25,752	504	14	35	
Hiroshima	885	170,114	70,631	19,942	45,679	88,196	2,460	7,337	4,484	44
Yamaguchi	11,889	136,073	3,797	923	2,739	18,683	891	765	930	
Tokushima	195	6,100	1,144	373	568	18,026	81	223	271	
Kagawa	1	1	1,352	424	630	15,982	292	48	127	
Ehime	452	10	217	520	1,183	27,825	194	394	607	
Kochi	500	4,036	584	161	735	11,573	167	231	490	1
Fukuoka	2,676	77,166	4,625	2,389	2,622	49,534	3,744	767	876	7
Saga		317	221	18	132	703	18	156	91	5
Nagasaki	3,550	20,376	20,766	25,052	932	24,695	160	1,834	4,805	27
Kumamoto	1,992	57,272	1,031	753	1,122	13,738	139	381	198	1
Oita	3,344	4,403	564	363	547	2,854	304	437	915	10
Miyazaki	6,386	10,996	685	249	544	8,109	82	384	1,391	7
Kagoshima	4,404	60,174	2,417	1,315	1,677	36,320	238	1,160	1,637	
Okinawa										
Karafuto										
Total	117,256	4,761,415	268,157	109,854	195,983	2,265,644	30,202	54,936	63,914	265

Figures are for September 30, 1945 with the exception of Tokushima (figures for June 30, 1945) and Kagoshima (figures for July 31, 1945)

*Explo. = Explosive *Incend. = Incendiary *Serious = Seriously *Sligh. = Slightly *Tota. = Totally *Par. = Partially *Demo. = Demolished *Dama = Damaged *For = Forest.

Table showing casualties and property damage in Japan, by cities

EXHIBIT A–2

Prefectures and cities	Casualties			Buildings totally lost			Victims of bombing effect
	Dead	Wounded	Total	Fire	Others	Total	
Hokkaido							
Hakodate	19	22	41	349	33	382	2,100
Muroran	408	164	572		344	344	5,300
Kushiro	187	167	351	946	258	1,204	8,000
Asahikawa	1	16	17	1		1	22
Otaru	10	17	27				21
Obihiro	2	4	6	2		2	86
Tokyo-To							
35 wards	93,056	59,633	152,689	741,360	3,535	744,895	2,890,820
Hachioji	290	70	360	12,895		12,895	74,443
Tachikawa	435	278	713	141	349	490	4,396
Kyoto-Fu							
Kyoto	81	215	296	2	91	93	1,450
Kaizuru	7	6	13				
Osaka-Fu							
Osaka	13,973	19,791	33,764	328,009	6,192	334,201	1,098,816
Sakai	1,407	1,487	2,894	14,751		14,751	57,224
Kishiwada	18	45	63	644	5	649	3,121
Toyonaka	578	898	1,476	1,388	612	2,000	22,558
Ikeda	14	18	32	96		96	328
Suita	57	99	156	197	50	247	1,206
Fuse	40	53	93	704	52	756	3,644
Takatsuki	3	10	13	10		10	10
Izumi-Otsu		3	3	3		3	3
Kanagawa							
Yokohama	4,616	14,215	18,831	98,361	609	98,970	399,187
Kawasaki	1,001	1,521	2,522	34,838	276	35,114	154,426
Yokosuka	16	87	103	2	43	45	707
Hiratsuka	228	292	520	7,215	2	7,217	31,038
Odawara	48	40	88	474	10	484	1,666
Fujiwara	21	38	59	8	12	20	144
Kamakura	1	2	3				
Hyogo							
Kobe	7,051	4,061	11,112	114,388	1,507	115,895	442,638
Amagasaki	573	305	878	10,728	427	11,155	44,028
Akashi	1,529	495	2,024	9,075	1,891	10,966	58,231
Ashiya	703	376	1,079	4,286	964	5,250	25,229
Nishinomiya	749	442	1,191	12,674	320	12,994	55,798
Himeji	514	154	668	10,798	715	11,513	55,402
Shikama	6	7	13	389		389	2,066
Itami	19	16	35	449	23	472	2,461
Aioi	35	43	78				
Nagasaki							
Nagasaki	13,294	29,739	43,033	11,555	1,326	12,881	120,820
Sasebo	1,000	497	1,497	12,458	367	12,825	65,478
Omura	96	99	195	418	95	513	709
Isahaya	2	5	7	28		28	125
Shimabara	8	16	24	4		4	
Niigata							
Niigata	73	216	289		2	2	10
Nagaoka	831	1,098	2,739	10,302		10,302	49,703
Saitama							
Urawa	18	35	53	165	1	166	770
Kawaguchi	29	101	130	150	41	191	1,183
Omiya	12	15	27	230		230	1,158
Kumagae	242	614	856	3,797		3,797	3,000
Kawagoe	5	6	11	4	5	9	62
Gumma							
Maebashi	471	168	639	11,434		11,434	53,654
Takasaki	18	33	51	701	39	740	3,845
Isezaki	9		9	1,746		1,746	8,320
Kiriu	1		1				

Table showing casualties and property damage in Japan, by cities—Continued

EXHIBIT A-2—*Continued*

Prefectures and cities	Casualties			Buildings totally lost			Victims of bombing effect
	Dead	Wounded	Total	Fire	Others	Total	
Chiba							
Chiba	861	776	1,637	7,815	287	8,102	41,212
Ichikawa	8	36	44	78	6	84	497
Funabashi	2	24	26	32	1	33	177
Matsudo	15	14	29	5	2	7	40
Choshi	394	248	642	5,017		5,017	25,267
Kisarazu	7	14	21	4	3	7	52
Tateyama	33	62	95	29	5	34	217
Ibaraki							
Mito	205	662	867	9,649	132	9,781	43,441
Hitachi	1,019	424	1,443	16,073	20	16,093	38,336
Tsuchiura	4	15	19				20
Tochigi							
Tochigi	2		2				
Ashikaga	6	3	9	6		6	45
Utsunomiya	570	1,189	1,759	10,601	384	10,985	48,000
Nara							
Nara	1	13	14	7		7	37
Mie							
Tsu	1,498	919	2,417	10,071	1,586	11,657	16,890
Uji-Yamada	102	228	330	4,927	16	4,943	
Yokkaichi	834	1,641	2,475	12,393	98	12,491	
Kuwana	469	945	1,414	6,223		6,223	
Matsuzaka	13	25	38	304		304	
Suzuka	32	76	108	42		42	
Ueno		1	1	2		2	
Aichi							
Nagoya	8,240	17,701	25,941	114,892	8,287	123,179	495,202
Ichinomiya	546	682	1,228	10,468		10,468	41,027
Okazaki	151	129	280	8,257		8,257	31,740
Toyohashi	576	796	1,372	19,640	147	19,787	74,772
Handa	134	197	331	30	213	243	1,520
Toyokawa	1,330	992	2,322	315	15	330	4,305
Seto		5	5	6		6	20
Kasugai	12	30	42	21	7	28	120
Shizuoka							
Hamamatsu	3,239	2,913	6,152	19,640	4,170	23,810	124,058
Shimizu	384	447	831	8,296	158	8,454	33,544
Numazu	268	530	798	9,878	25	9,903	44,578
Shizuika	1,764	6,785	8,549	31,224	131	31,355	127,199
Yamanashi							
Kofu	832	1,262	2,094	18,099		18,099	85,805
Shiga							
Otsu	18	125	143	1	8	9	
Kikone	17	57	74		1	1	
Nagahama		1	1		2	2	
Gifu							
Gifu	818	1,059	1,877	20,303		20,303	
Ogaki	74	152	226	4,722	40	4,672	
Nagano							
Nagano	29	27	56	48	28	76	216
Ueda	1	5	6		2	2	30
Miyagi							
Sendai	992	1,687	2,679	11,642		11,642	57,321
Ishimaki	13	16	29		1	1	2
Shiogama	3	3	6	441	3	444	2,142
Fukushima							
Taira	22	99	121	668	41	709	3,475
Koriyama	388	354	742	455	31	486	2,318

Table showing casualties and property damage in Japan, by cities—Continued

EXHIBIT A-2—*Continued*

Prefectures and cities	Casualties			Buildings totally lost			Victims of bombing effect
	Dead	Wounded	Total	Fire	Others	Total	
Iwate							
Morioka	6	19	25	103	15	118	1,413
Kamaishi	564	553	1,117	3,060	540	3,600	16,030
Miyakoshi	9	6	15	444	1	445	2,350
Aomori							
Aomori	1,018	255	1,273	15,253	57	15,310	72,232
Hachinohe	22	21	43	58	209	267	859
Yamagata							
Sakata	18	33	51	1	4	5	20
Akita							
Akita	105	93	198	38	45	83	336
Fukui							
Fukui	1,584	1,556	3,140	21,584	----	21,584	92,304
Tsuruga	153	312	465	4,097	1	4,098	21,208
Toyama							
Toyama	2,149	3,787	5,936	22,754	12	22,766	113,920
Takaoka	25	16	41	----	18	18	90
Tottori							
Yonago	5	9	14	11	----	11	23
Shimane							
Hamada	----	----	----	3	----	3	12
Okayama							
Okayama	1,745	975	2,720	25,200	3	25,203	104,605
Tamano	13	47	60	----	11	11	60

EXHIBIT A–3.

Total tons of bombs dropped on Japan by U. S. Army Air Forces—By months

AIR FORCE

Date	5th	7th	13th	20th	Total	Incendiary
1944						
Jan	----	----	----	----	----	----
Feb	----	----	----	----	----	----
Mar	----	----	----	----	----	----
Apr	----	----	----	----	----	----
May	----	----	----	----	----	----
June	----	----	----	----	----	----
July	----	----	----	28	28	----
Aug	----	----	----	183	183	55
Sept	----	5	----	----	5	----
Oct	----	----	----	159	159	68
Nov	4	----	----	762	766	298
Dec	----	----	----	992	992	495
1945						
Jan	----	----	----	1,261	1,261	435
Feb	----	----	----	1,884	1,884	929
Mar	----	----	----	12,788	12,788	10,023
Apr	----	4	----	16,146	16,150	3,967
May	8	4	----	25,053	25,065	18,699
June	81	49	----	27,367	27,497	18,172
July	418	2,559	----	40,445	43,422	31,670
Aug. (15 days)	1,382	2,457	6	19,842	23,687	13,655
Totals	1,893	5,078	6	146,910	153,887	98,466

Source: Office of Statistical Control, Headquarters, Army Air Forces. Based on figures given by Tabulating Service Section, U.S.S.B.S.

EXHIBIT A–4.

Total tons of bombs dropped on Japan by U. S. Army Air Forces. (Includes 5th, 7th, 13th and 20th Air Forces)

[Detail by months showing cities against which a total of 100 tons or more was dropped]

AKASHI

1945	Tons	Incendiary
January	154	
May	2	
June	483	
July	975	
Total	1,614	975

AKITA

June	55	
August	954	
Total	1,009	

AMAGASAKI

June	2,037	
July	690	
August	902	
Total	3,629	1,773

AOMORI

January	4	
July	547	
Total	551	547

CHIBA

1944	Tons	Incendiary
December	3	
1945		
June	144	
July	889	
Total	1,036	860

CHIRAN

April	5	
May	30	
July	34	
August	61	
Total	130	

CHOSHI

February	8	
March	32	
April	4	
July	629	
August	26	
Total	699	662

EXHIBIT A-4—*Continued*

	Tons	Incendiary
FUKUI		
1945		
July	954	
August	7	
Total	961	961
FUKUOKA		
June	1,526	1,526
FUKUYAMA		
August	556	556
GIFU		
July	898	898
HACHIOJI		
August	1,594	1,594
HAMAMATSU		
1944		
November	10	
December	9	
1945		
January	55	
February	65	
March	35	
April	434	
May	1,525	
June	966	
July	18	
August	7	
Total	3,124	1,054
HANDA		
July	544	
HIKARI		
August	885	
HIMEJI		
June	351	
July	768	
Total	1,119	768
HIRATSUKA		
July	1,163	1,163
HITACHI		
July	976	971
IBUSUKI		
May	101	
August	2	
Total	103	
ICHINOMIYA		
July	1,640	1,640
IMABARI		
April	66	
May	77	
August	510	
Total	653	490
ISESAKI		
August	614	614
IWAKUNI		
May	5	
August	171	
Total	176	
IZUMI		
April	566	
July	11	
August	25	
Total	602	
KAGAMIGAHARA		
April	3	
June	753	
Total	756	

	Tons	Incendiary
KAGOSHIMA		
1945		
April	192	
May	3	
June	812	
July	330	
August	160	
Total	1,497	968
KANOYA		
February	3	
April	1,296	
May	218	
July	284	
August	126	
Total	1,927	5
KASUMIGAURA		
March	5	
June	366	
Total	371	5
KAWASAKI		
February	8	
April	1,501	
May	7	
July	1,102	
August	1,017	
Total	3,638	1,098
KIKAI SHIMA		
July	278	17
KOBE		
February	208	
March	2,338	
April	20	
May	467	
June	3,087	
July	20	
Total	6,140	5,491
KOCHI		
March	2	
April	5	
May	11	
June	36	
July	1,088	
Total	1,142	1,079
KOFU		
March	3	
July	971	
Total	974	971
KOIZUMI		
April	275	
August	7	
Total	282	7
KOKUBU		
April	959	
May	55	
Total	1,014	
KORIYAMA		
April	456	
July	10	
Total	466	
KUDAMATSU		
June	209	
July	494	
Total	703	
KUMAGAYA		
August	593	581

	Tons	Incendiary
KUMAMOTO		
1945		
May	14	
July	1,129	
August	403	
Total	1,546	1,491
KURE		
March	3	
April	6	
May	591	
June	796	
July	1,426	
Total	2,822	1,082
KURUME		
July	11	
August	175	
Total	186	145
KUSHIKINO		
February	2	
May	3	
August	116	
Total	121	114
KUSHIMOTO		
January	3	
February	10	
March	12	
May	47	
June	55	
July	12	
August	14	
Total	153	89
KUSHIRA		
April	467	
KUWANA		
July	1,511	693
KYUSHU		
May	4	
June	7	
July	184	
August	80	
Total	275	22
MAEBASHI		
August	724	691
MAKURAZAKI		
April	14	
June	12	
July	68	
August	35	
Total	129	71
MARIFU		
August	710	
MATSUYAMA		
May	191	
July	896	
August	116	
Total	1,203	896
MITO		
March	7	
August	1,145	
Total	1,152	1,152
MIYAKONOJO		
April	347	
May	216	
July	16	
August	230	
Total	809	229

	Tons	Incendiary
MIYAZAKI		
1945		
April	678	
May	206	
June	6	
July	165	
August	238	
Total	1,293	263
MOJI		
March	1	
June	626	
Total	627	626
NAGAOKA		
May	4	
August	925	
Total	929	925
NAGASAKI		
1944		
August	67	
1945		
April	4	
July	170	
August	154	
Total	395	53
NAGOYA		
1944		
November	3	
December	488	
1945		
January	469	
February	135	
March	5,258	
April	614	
May	6,137	
June	1,050	
July	461	
August	43	
Total	14,658	10,603
NISHINOMIYA MI		
August	2,004	1,923
NITTAGARA		
April	249	
NOBEOKA		
March	1	
May	5	
June	840	
July	132	
August	46	
Total	1,024	853
NUMAZU		
1944		
November	7	
1945		
January	5	
February	1	
April	5	
May	10	
July	1,036	
Total	1,067	1,044
OGAKI		
July	664	659

EXHIBIT A-4—*Continued*

OITA

	Tons	Incendiary
1945		
March	135	
April	228	
May	385	
June	6	
July	798	
August	34	
Total	1,586	824

OKAYAMA

	Tons	Incendiary
March	2	
June	982	
Total	984	982

OKAZAKI

	Tons	Incendiary
July	851	851

OMURA

	Tons	Incendiary
1944		
July	2	
September	5	
October	155	
November	290	
December	52	
1945		
January	90	
March	160	
May	48	
June	22	
July	244	
Total	1,068	241

OMUTA

	Tons	Incendiary
June	770	
July	965	
August	68	
Total	1,803	1,735

OSAKA

	Tons	Incendiary
1944		
November	6	
1945		
January	38	
February	36	
March	1,736	
April	3	
May	2,797	
June	5,120	
July	767	
August	707	
Total	11,210	7,651

OSHIMA

	Tons	Incendiary
April	3	
May	398	
June	6	
July	5	
Total	412	

OTA

	Tons	Incendiary
February	246	
May	244	
Total	490	50

OTAKE

	Tons	Incendiary
May	560	

SAEKI

	Tons	Incendiary
April	161	
May	106	
June	6	
July	2	
August	5	
Total	280	

SAGA

	Tons	Incendiary
1945		
August	469	439

SAKAI

	Tons	Incendiary
July	779	779

SASEBO

	Tons	Incendiary
1944		
July	24	
August	3	
October	2	
1945		
April	9	
May	3	
June	1,060	
July	18	
August	23	
Total	1,142	1,064

SENDAI

	Tons	Incendiary
1944		
December	3	
1945		
March	13	
July	1,013	
August	16	
Total	1,045	1,018

SHIMIZU

	Tons	Incendiary
1944		
December	3	
1945		
February	7	
March	4	
April	8	
June	5	
July	1,061	
August	16	
Total	1,104	1,042

SHIMONOSEKI

	Tons	Incendiary
1944		
December	2	
1945		
June	4	
July	833	
Total	839	837

SHIMOTSU

	Tons	Incendiary
July	1,397	

SHINGU CITY

	Tons	Incendiary
1944		
December	3	
1945		
January	42	
February	12	
March	29	
May	8	
June	31	
July	43	
August	8	
Total	176	89

SHIZUOKA

	Tons	Incendiary
1944		
November	6	
December	6	
1945		
January	6	
February	19	
March	19	
April	281	
May	45	
June	869	
August	9	
Total	1,260	924

SUKAGAWA

	Tons	Incendiary
June	806	

TACHIARAI

	Tons	Incendiary
March	670	
April	250	
May	99	
Total	1,019	

TACHIKAWA

	Tons	Incendiary
April	1,062	
June	169	
Total	1,231	13

TAKAMATSU

	Tons	Incendiary
July	833	809

TAKARAZUKA

	Tons	Incendiary
July	458	

TAMASHIMA

	Tons	Incendiary
March	6	
April	24	
June	615	
Total	645	

TARUMIZU

	Tons	Incendiary
August	289	266

TOKUSHIMA

	Tons	Incendiary
January	6	
May	14	
June	53	
July	1,057	
August	5	
Total	1,135	1,092

TOKUYAMA

	Tons	Incendiary
April	6	
May	545	
July	751	
Total	1,302	718

TOKYO

	Tons	Incendiary
1944		
November	414	
December	364	
1945		
January	262	
February	860	
March	2,175	
April	5,033	
May	6,979	
June	38	
July	10	
August	365	
Total	16,500	12,536

TOMIOKA

	Tons	Incendiary
June	173	

TOMITAKA

	Tons	Incendiary
1945		
April	238	
June	9	
July	31	
August	14	
Total	287	4

TOSU

	Tons	Incendiary
July	12	
August	90	
Total	102	

TOYAMA

	Tons	Incendiary
July	20	
August	1,472	
Total	1,492	1,472

TOYOHASHI

	Tons	Incendiary
1944		
December	7	
1945		
January	5	
February	21	
March	9	
April	25	
May	10	
June	949	
July	5	
Total	1,031	958

TOYOKAWA

	Tons	Incendiary
August	813	

TSU

	Tons	Incendiary
May	4	
June	193	
July	1,308	
August	44	
Total	1,549	734

TSUIKI

	Tons	Incendiary
July	49	
August	221	
Total	270	

TSURUGA

	Tons	Incendiary
June	6	
July	683	
August	5	
Total	694	683

UBE

	Tons	Incendiary
March	2	
April	3	
July	1,374	
August	938	
Total	2,317	722

UJIYAMADA

	Tons	Incendiary
January	2	
February	27	
March	3	
May	6	
June	42	
July	743	
August	9	
Total	832	773

EXHIBIT A-4—*Continued*

USA

1945	Tons	Incendiary
April	217	
May	145	
July	48	
August	85	
Total	495	1

UTSUNOMIYA

July	803	803

UWA JIMA

May	8	
June	16	
July	1,077	
August	5	
Total	1,106	1,089

WAKAYAMA

1945	Tons	Incendiary
January	3	
February	10	
March	1	
April	3	
May	11	
June	38	
July	838	
August	21	
Total	928	854

YAWATA

1944	Tons	Incendiary
June	93	
August	112	
1945		
August	1,302	
Total	1,507	1,302

YOKKAICHI

1945	Tons	Incendiary
March	8	
June	843	
July	474	
August	10	
Total	1,335	572

YOKOHAMA

1944	Tons	Incendiary
November	1	
December	4	
1945		
January	3	
February	14	
March	3	
April	3	
May	2,570	
Total	2,601	2,580

	Tons	Incendiary
Total tons dropped on unidentified cities or on those on which a total of less than 100 tons was dropped	3,578	1,058
Grand total	153,887	98,466

Source: Office of Statistical Control, Headquarters, Army Air Forces.

Prepared for Civilian Defense Division by Tabulating Service Section, 8 January 1946.

KEY
COMMAND, ORDER
ADVISORY COMMAND
COMPULSORY ADVICE
LIAISON

ORGANIZATION OF JAPANESE CIVIL AIR DEFENSE

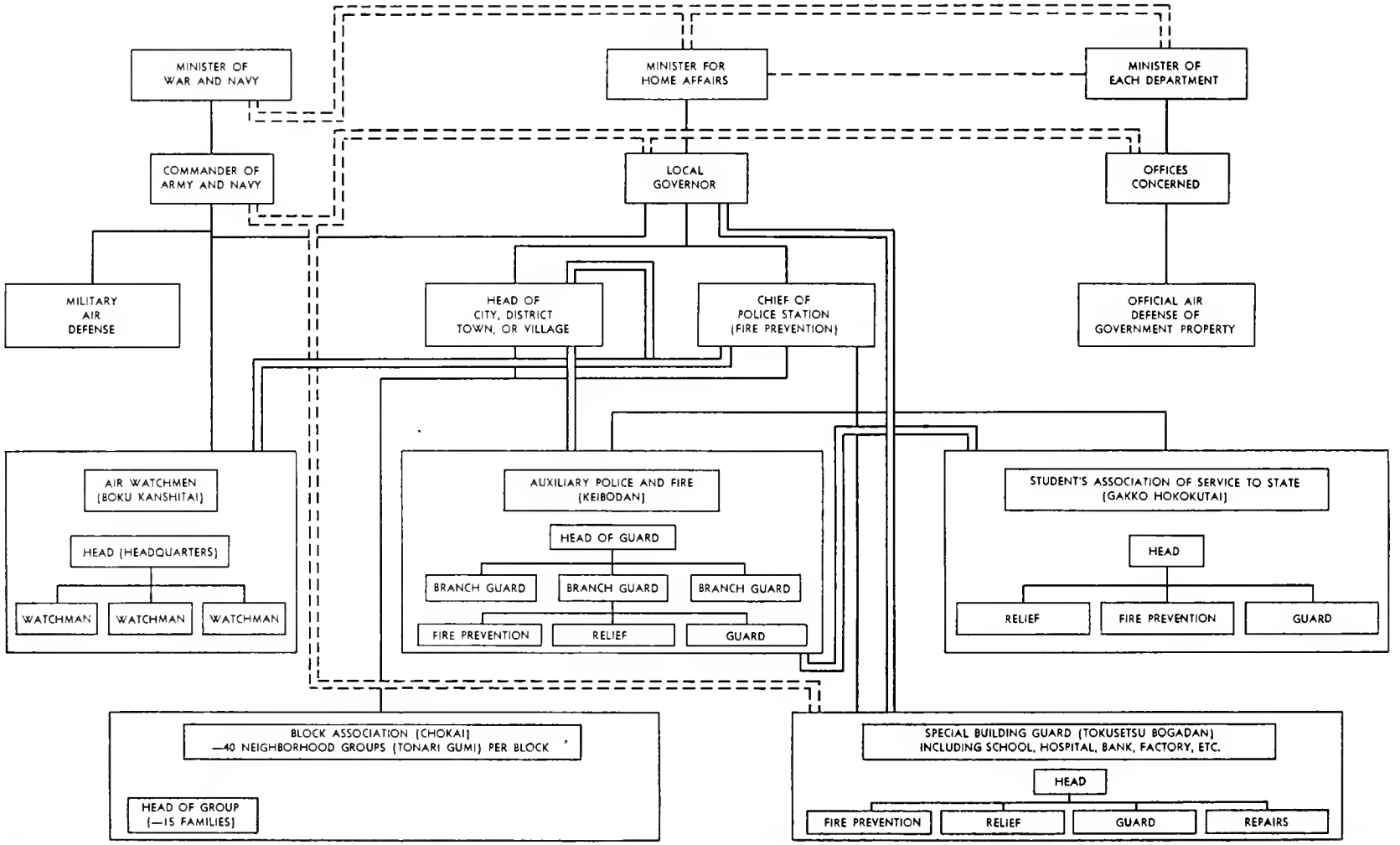


EXHIBIT B–1

EXHIBIT B–2

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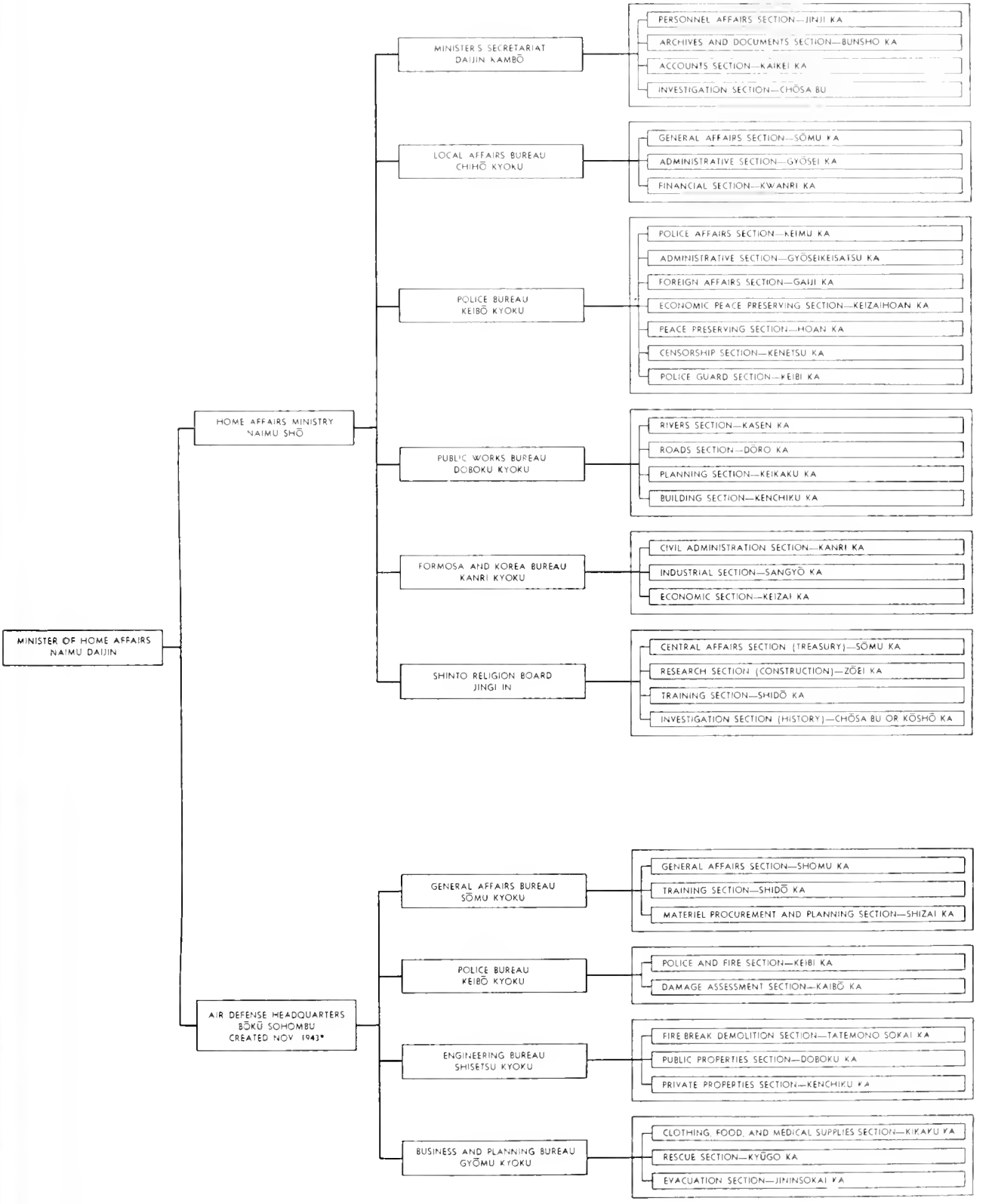
ORGANIZATION OF JAPANESE MINISTRY OF HOME AFFAIRS



*NOTE—This headquarters was closed on August 31, 1945.

Great Japan Air-Defense Association (Dai Nippon Boku Kyokai)

1. *Organization.* a. The Great Japan Air-Defense Association was created April 28, 1939, by imperial decree upon the recommendation of the Minister of Home Affairs, with the concurrence of the army and the navy under an official charter granted by the Ministry of Home Affairs. The charter was twice amended, on 31 March 1941 and 1 July 1943 (when the membership fees were increased). The central office was located in Kojimachi Ward, Nagato District at Number 17 in the first chome. It was established to give prestige to the civilian air-defense program, to act as a sponsoring organization in respect to training and propaganda and to provide financial assistance to those volunteer civilian defense organizations that were unable to meet the cost of equipment and training.

b. Any contributor automatically became a member and, like most sponsoring organizations, the association included many honorary offices and memberships to support its prestige and to appeal to the political and social ambitions of wealthy patrons. A member of the Imperial Household and the Minister of Home Affairs were honorary presidents (Sosai), leading government officials were chairmen (Kaicho) and deputy chairmen (Fuku Kaicho); there were also "directors" (Riji), "superintendents" (Kanji), "permanent council members" (Jogi In), and "trustees" (Hyogi In).

c. Memberships included:

(1) "Special members" (Tokubetsu Yuko Kaiin).

(2) "Regular members" (Sei Kaiin).

(3) "Ordinary members" (Futsu Kaiin).

(4) "Honorary members" (Yuko Kaiin).

(5) "Patron members" (Sanjo Kaiin).

2. *Central and Branch Associations.* a. The chief director (Riji Cho) carried the actual operating responsibility and represented the central organization which was primarily concerned with planning and the allocation of appropriations.

b. The active operating bodies were the branch associations, one being established in each of the prefectures. Each prefectural governor acted as chairman of the branch located in his prefecture.

c. The local branch membership deteriorated as the demands of the army and navy for man power increased. Many of the more capable members were drafted, so that toward the end of the war the membership consisted largely of retired officials and the older members of the community.

3. *Financial Support.* a. The funds for financing the activities of the association were received from three sources:

(1) Government subsidies.

(2) Subscriptions.

(3) Money received from branch organizations.

A table indicating the funds received from these sources, by dates, is shown on Page 207.

b. The branch organizations (one in each prefecture) varied considerably in respect to initiative and effectiveness, depending largely upon the interest of the prefectural governor. Money was collected from wealthy individuals, large companies, merchants and factories. Twenty percent of these funds was supposed to be turned in to the central headquarters of the association, but considerably less was actually contributed by the branches. A statement covering receipts and disbursements was made to the Minister of Home Affairs, being first subject to the approval of the Director of the Association.

4. *Operations.* a. Expenditures were primarily for various types of air-defense equipment: gas masks, fire pumps, steel helmets, buckets, blackout curtains and emergency ambulances. Expenditures frequently took the form of subsidizing the efforts of a local defense organization which needed additional funds to carry through an air-defense project. An estimate of the defense equipment provided by the association is shown on Page 207.

b. The association also emphasized the need for air-defense training and was an active agent in this field on the prefectural and local levels, including printing and distributing of pamphlets on the various aspects of air defense, sponsoring air-defense schools, and providing lecturers and experts for such instruction.

An estimate of air-defense equipment sponsored by the Great Japan Air-Defense Association (Dai Nippon Boku Kyokai) as reported by the Central (Tokyo) Office

1. Air-Defense Gas Masks:
   a. For the use of the general public 12,000,000
   b. For the use of those engaged in air-defense work (civilian guard groups, etc.) 1,000,000
2. Fire pumps (The distribution of pumps dated from April, 1944):
   a. Automobile pumps 100
   b. Automobile pumps (small type) 50
   c. Hand pumps (medium type) 3,000
   d. Hand pumps (small type) 90,000
3. Steel helmets 300,000
4. Buckets 100,000
5. Bamboo stretchers 40,000
6. Straw mats for firefighting 50,000
7. Curtains (for use in blackouts) 500,000
8. Automobiles to be used as emergency ambulances 50

GOVERNMENT SUBSIDIES

[Appropriated by the Diet on the recommendation of the Minister of Home Affairs through the Minister of Finance]

Year	General subsidies	Subsidies for the training of men essential to air defense	Total
1939	¥100,000		¥100,000
1940	95,000		95,000
1941	97,000	¥100,000	197,000
1942	97,000	100,000	197,000
1943	97,000	100,000	197,000
1944	87,000	100,000	187,000
1945			
Total	¥573,000	¥400,000	¥973,000

ASSOCIATION SUBSCRIPTIONS

	27 Dec. 39	25 Jan. 42	30 Dec. 42	30 Dec. 42
Quota	¥3,000,000.00	¥3,000,000.00	¥3,000,000.00	¥3,000,000.00
Total subscribed	¥3,035,175.71	¥3,153,625.71	¥3,153,625.71	¥3,153,625.71
Subscriptions receivable	170,268.00	165,950.00	150,600.00	129,100.00
Subscriptions paid	¥2,864,907.71	¥2,987,675.71	¥3,003,025.71	¥3,024,525.71

MONEY RECEIVED FROM BRANCH ORGANIZATIONS

[20 percent of the money raised by each Prefecture Branch was supposedly contributed to the central association]

1940	1941	1942	1943	1944	1945
¥402,674.76	¥374,948.49	¥1,390,036.68	¥646,894.61	¥1,485,338.91	¥267,145.90
Total					¥4,567,939.35

EXHIBIT B–4

The Great Japan Fire-Defense Association (Dai Nippon Keibo Kyokai)

1. *Origin and Purposes.* a. Professional fire departments were a comparatively recent development in Japan. Until 1918, when the first municipal fire department was established in Tokyo, all Japanese cities were entirely dependent upon volunteer fire departments. Even at the time of the air raids only the largest of the cities of Japan had official municipal fire departments.

b. In July 1927 the volunteer departments throughout Japan organized the Great Japan Volunteer Fire Department Association (Dai Nippon Shobogumi Kyokai) for the purposes of (1) coordinating operations, (2) standardizing equipment and procedures, and (3) training the members of the volunteer fire departments (by demonstrations, pamphlets and itinerant training schools).

2. *The Creation of the Great Japan Fire-Defense Association.* a. In 1939 the auxiliary police and fire units (Keibodan) were created for the purposes of air defense, the membership being largely drawn from the volunteer fire departments throughout the country. In April 1939, the association was, therefore, reorganized and became "The Great Japan Fire-Defense Association" (Dai Nippon Keibo Kyokai) which continued the work of its predecessor.

3. *Organization.* a. The central office of the fire-defense association was supported by branch associations, there being one branch in each of the prefectures and affiliated branches in Korea, Formosa, and Karafuto.

b. The Minister of Home Affairs acted as president and appointed the other officials who carried the operating responsibility in the central office. Similarly, each prefectural governor acted as director of the branch located in his prefecture and appointed the chief officials in the branch.

c. It should be noted, however, that the association had no official connection with the municipal fire departments, the neighborhood associations or any other fire-fighting service except the fire arm of the Auxiliary Police and Fire Units (Keibodan).

4. *Financial Support.* a. The Great Japan Fire-Defense Association received funds from three sources:

(1) The national government (through the Ministry of Home Affairs).

(2) The prefectural governments.

(3) Individuals (not including Keibodan members who made their contribution in the form of volunteer service).

b. Branch associations contributed a sum equivalent to 3 sen per year for each Auxiliary Police and Fire Unit member to the central association.

5. *Functions.* a. The association performed the following functions:

(1) The distribution of pamphlets on fire fighting under the supervision of the prefectural police.

(2) The maintenance of centers for the repair of the fire equipment of the Auxiliary Police and Fire Units. (This work centered in Tokyo and extended to the more important prefectures only).

(3) The allocation of relief funds to members of the Auxiliary Police and Fire Units who were injured on duty, or to the families of those killed.

(4) The maintenance of an experimental laboratory for testing fire-fighting techniques and equipment.

(5) The instruction of selected members of the Auxiliary Police and Fire Units in a six-day course given twice a year in the Tokyo headquarters of the association.

(6) Instruction to volunteer civilian air-defense organizations in the various prefectures (in cooperation with the Great Japan Air-Defense Association) covering the fire-fighting aspects of civilian air defense.

6. *Relations with the Great Japan Air-Defense Association.* a. The Great Japan Air-Defense Association was established in April 1939, at the same time that the subject association was reorganized as the Great Japan Fire-Defense Association. There was a pointed rivalry between the two organizations, but the Air-Defense Association rapidly took the lead, being accorded greater prestige and more financial support by the Ministry of Home Affairs.

b. In spite of the resentment of the older organization, a working agreement was reached in which the Police and Fire Association assumed a minor role, retaining its responsibility for training for fire fighting in collaboration with the Air-Defense Association which assumed the authority for training in all other aspects of air defense.

c. At the end of the war, however, the Air-Defense Association was abolished, whereas the Fire-Defense Association continued to perform its fire-fighting mission as an essential peacetime organization.

ADMINISTRATIVE ORGANIZATION OF TOKYO METROPOLITAN DISTRICT AS RELATED TO CIVILIAN AIR DEFENSE

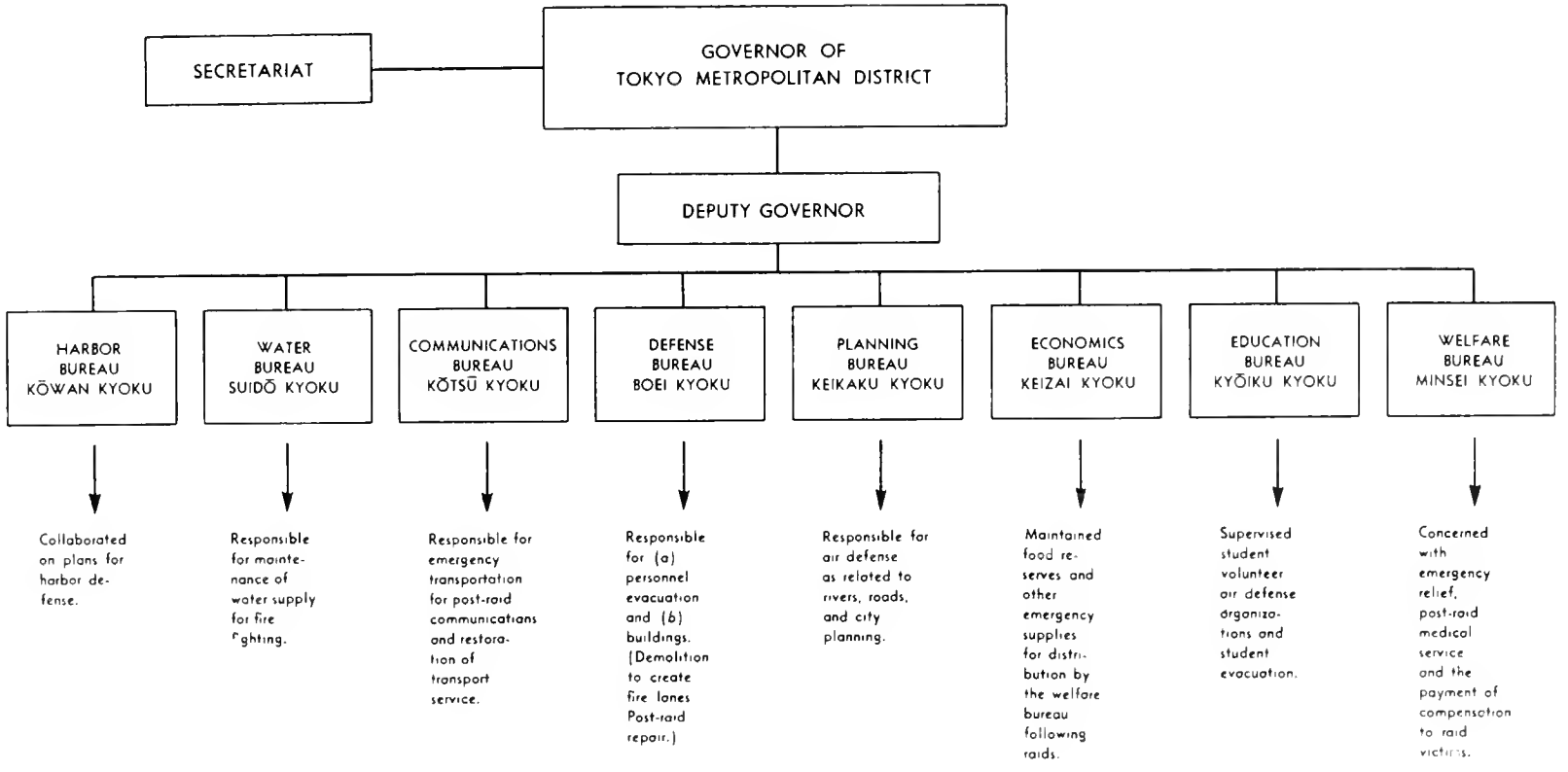
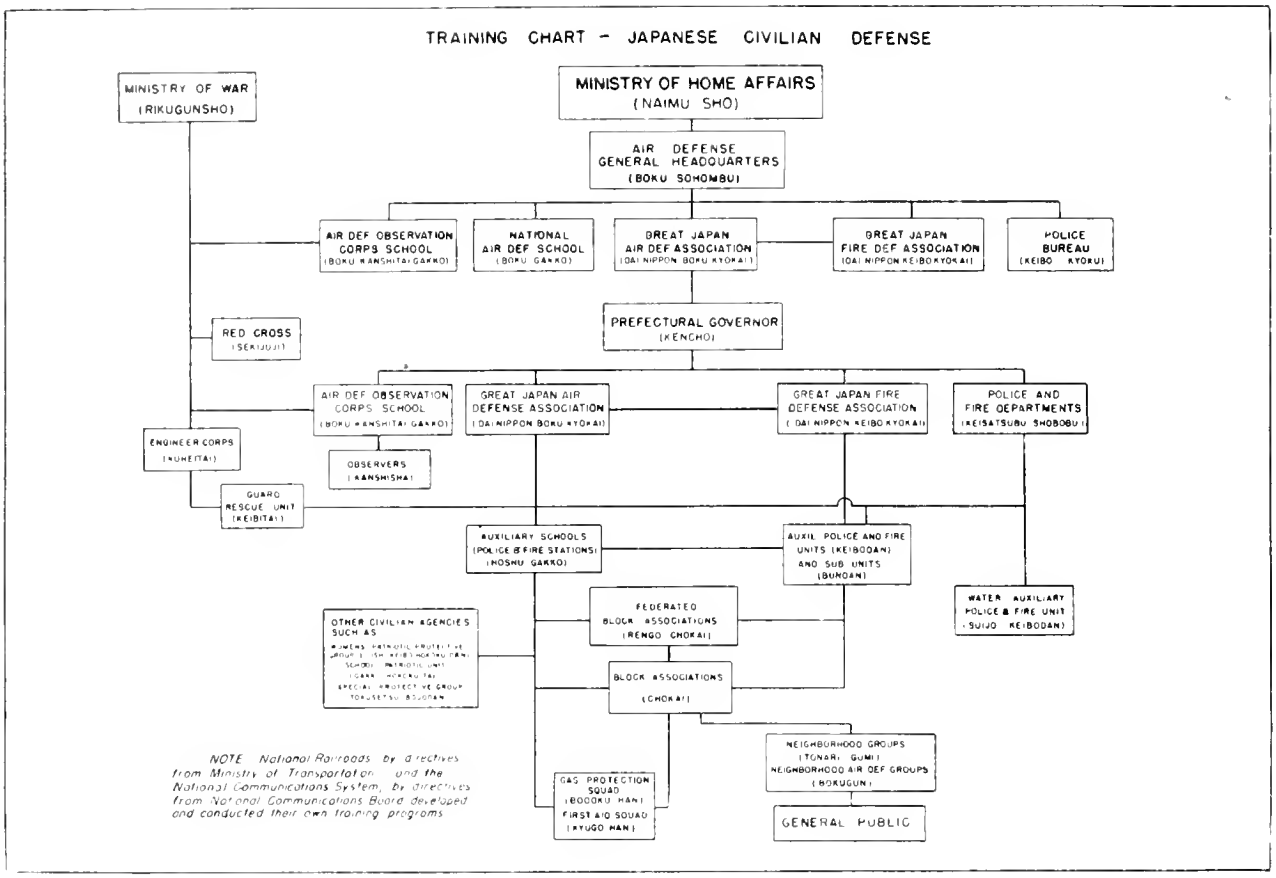
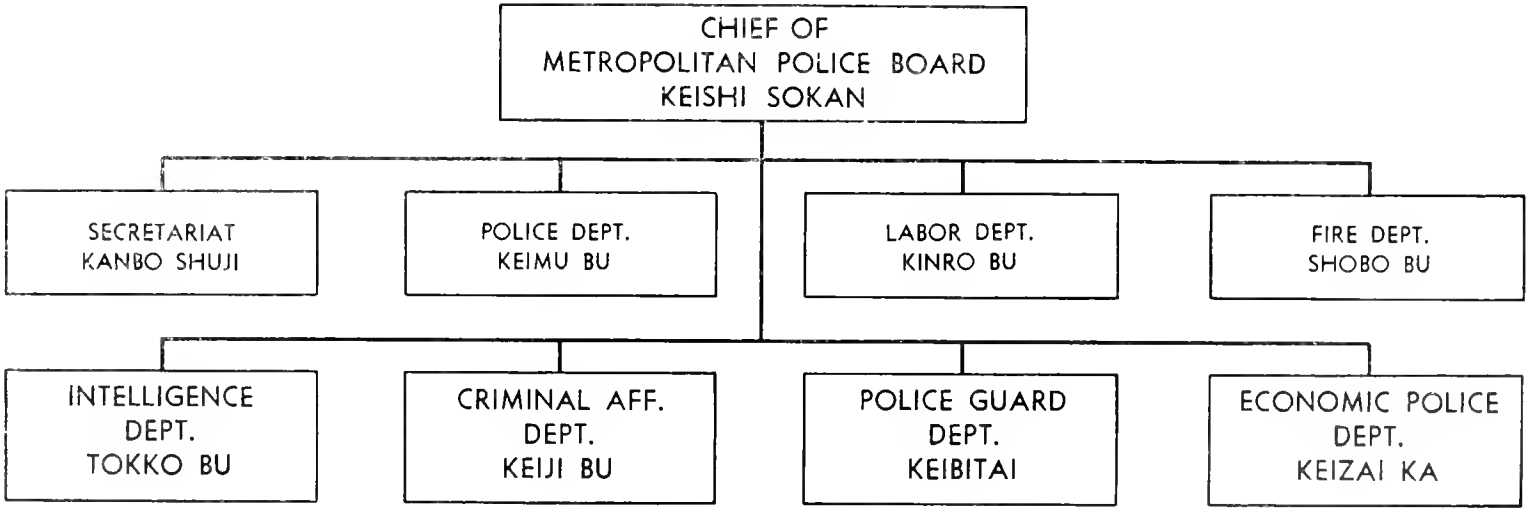


EXHIBIT B-5

EXHIBIT B-6


TRAINING CHART - JAPANESE CIVILIAN DEFENSE
MINISTRY OF WAR (RIKUGUNSHO)
MINISTRY OF HOME AFFAIRS (NAIMU SHO)
AIR DEFENSE GENERAL HEADQUARTERS (BOKU SOHOMBU)
AIR DEF OBSERVATION CORPS SCHOOL (BOKU KANSHITAI GAKKO)
NATIONAL AIR DEF SCHOOL (BOKU GAKKO)
GREAT JAPAN AIR DEF ASSOCIATION (DAI NIPPON BOKU KYOKAI)
GREAT JAPAN FIRE DEF ASSOCIATION (DAI NIPPON KEIBO KYOKAI)
POLICE BUREAU (KEIBO KYOKU)
PREFECTURAL GOVERNOR (KENCHO)
RED CROSS (SEKIJUJI)
AIR DEF OBSERVATION CORPS SCHOOL (BOKU KANSHITAI GAKKO)
GREAT JAPAN AIR DEFENSE ASSOCIATION (DAI NIPPON BOKU KYOKAI)
GREAT JAPAN FIRE DEFENSE ASSOCIATION (DAI NIPPON KEIBO KYOKAI)
POLICE AND FIRE DEPARTMENTS (KEISATSUBU SHOBOBU)
ENGINEER CORPS (KOHEITAI)
OBSERVERS (KANSHISHA)
GUARD RESCUE UNIT (KEIBITAI)
AUXILIARY SCHOOLS (POLICE & FIRE STATIONS) (HOSHU GAKKO)
AUXIL POLICE AND FIRE UNITS (KEIBODAN) AND SUB UNITS (BUNDAN)
WATER AUXILIARY POLICE & FIRE UNIT (SUIJO KEIBODAN)
FEDERATED BLOCK ASSOCIATIONS (RENGO CHOKAI)
OTHER CIVILIAN AGENCIES SUCH AS
BLOCK ASSOCIATIONS (CHOKAI)
NEIGHBORHOOD GROUPS (TONARI GUMI) NEIGHBORHOOD AIR DEF GROUPS (BOKUGUN)
GAS PROTECTION SQUAD (BOGOKU HAN) FIRST AID SQUAD (KYUGO HAN)
GENERAL PUBLIC
NOTE National Railroads, by directives from Ministry of Transportation and the National Communications System, by directives from National Communications Board developed and conducted their own training programs.

ORGANIZATIONAL STRUCTURE OF THE TOKYO METROPOLITAN POLICE BOARD



Secretariat: Archives and Records.

Police Department: Supervision of police affairs. Escort for Imperial Family. Special Guard. General supervision, maintenance of public order and control of police communications during air raids.

Intelligence Department: Secret intelligence. Counter-intelligence. Censorship.

Criminal Affairs Department: Crime prevention. "Thought Control."

Labor Department: Enforcement of labor laws. Emergency labor mobilization.

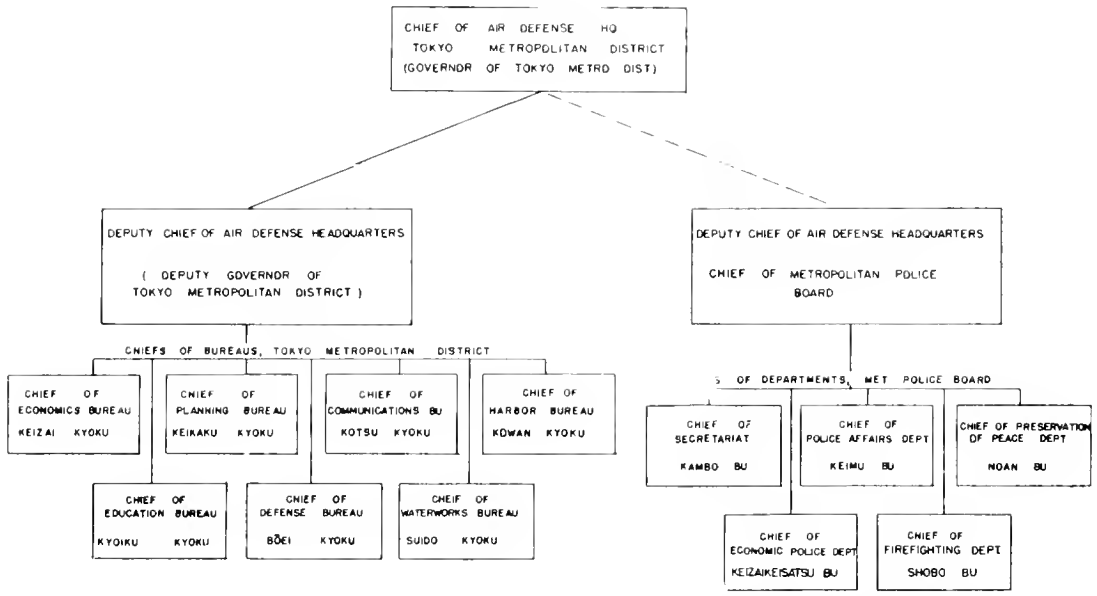
Fire Department: Prevention and extinguishing of fires, procurement and maintenance of equipment, emergency water supply and fire-prevention systems. Supervision of all fire-fighting forces during air raids.

Police Guard Department: Mobile guard available to meet special emergencies during air raids.

Economic Police Department: Enforcement of price controls and laws regarding food, clothing, housing, and transportation. Supervision of first aid and issuance of emergency supplies during air raids.

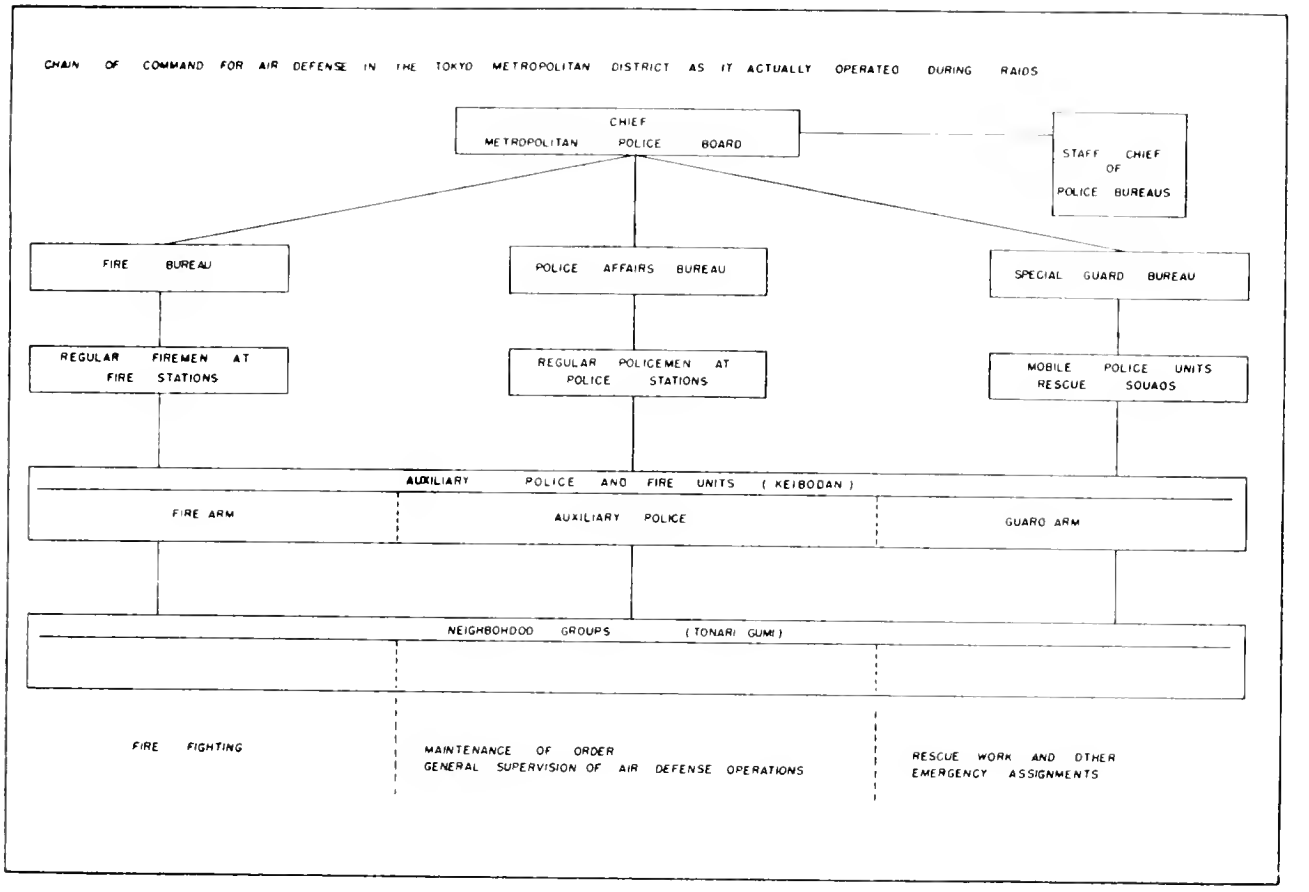
EXHIBIT B-8

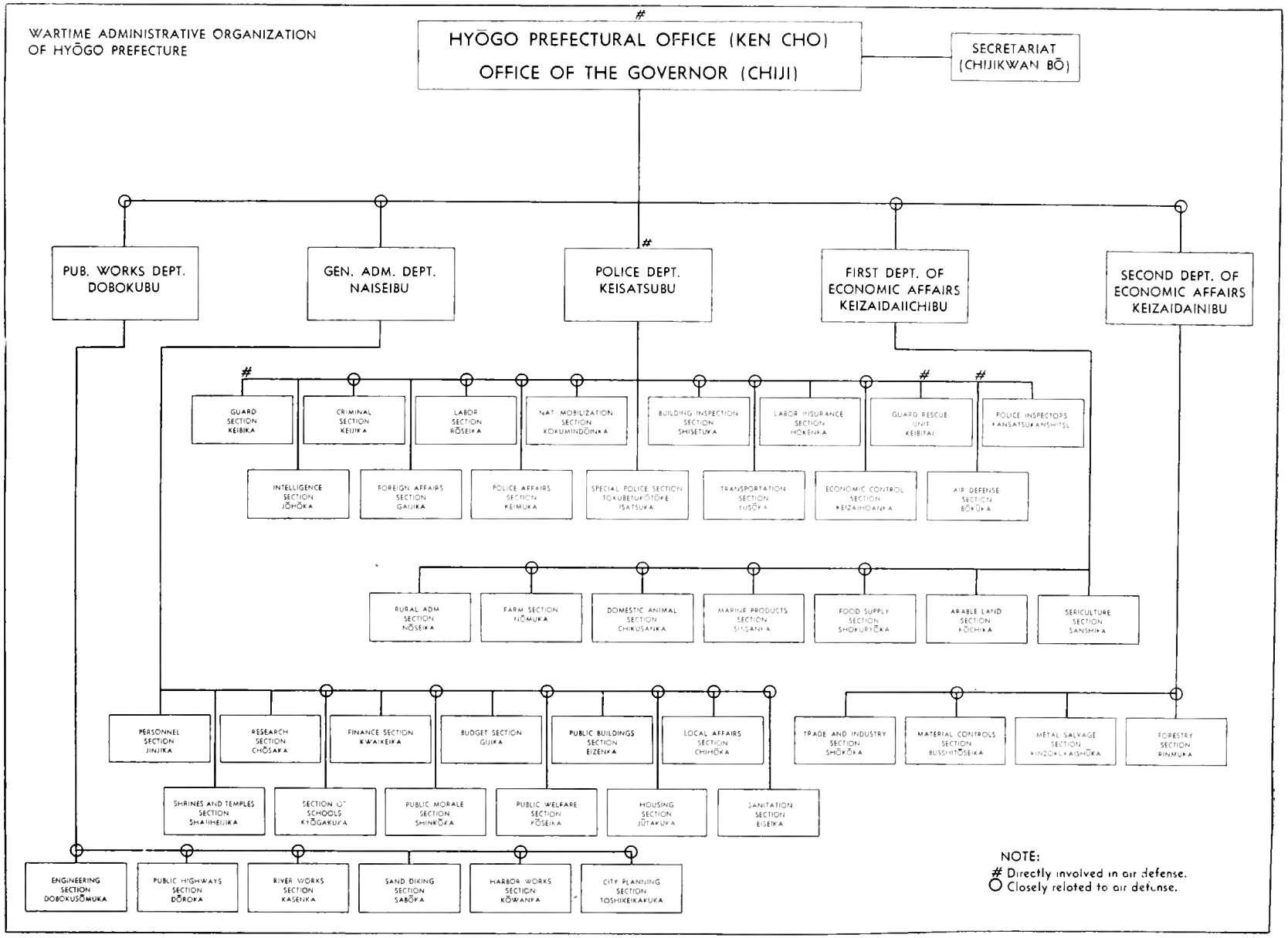
Theoretic Orgonization of Air Defense Headquarters, Tokyo
As Estoblished By Low

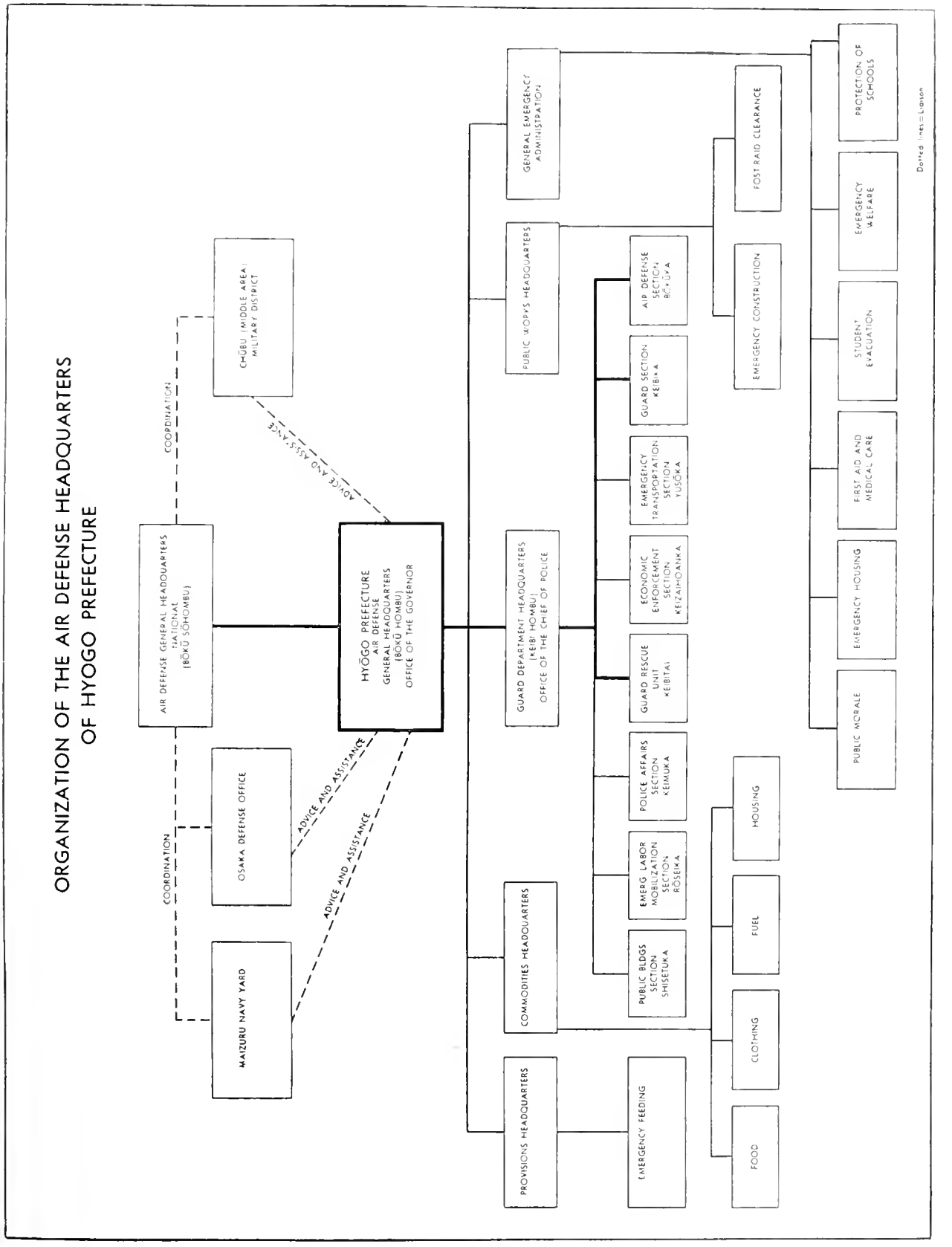


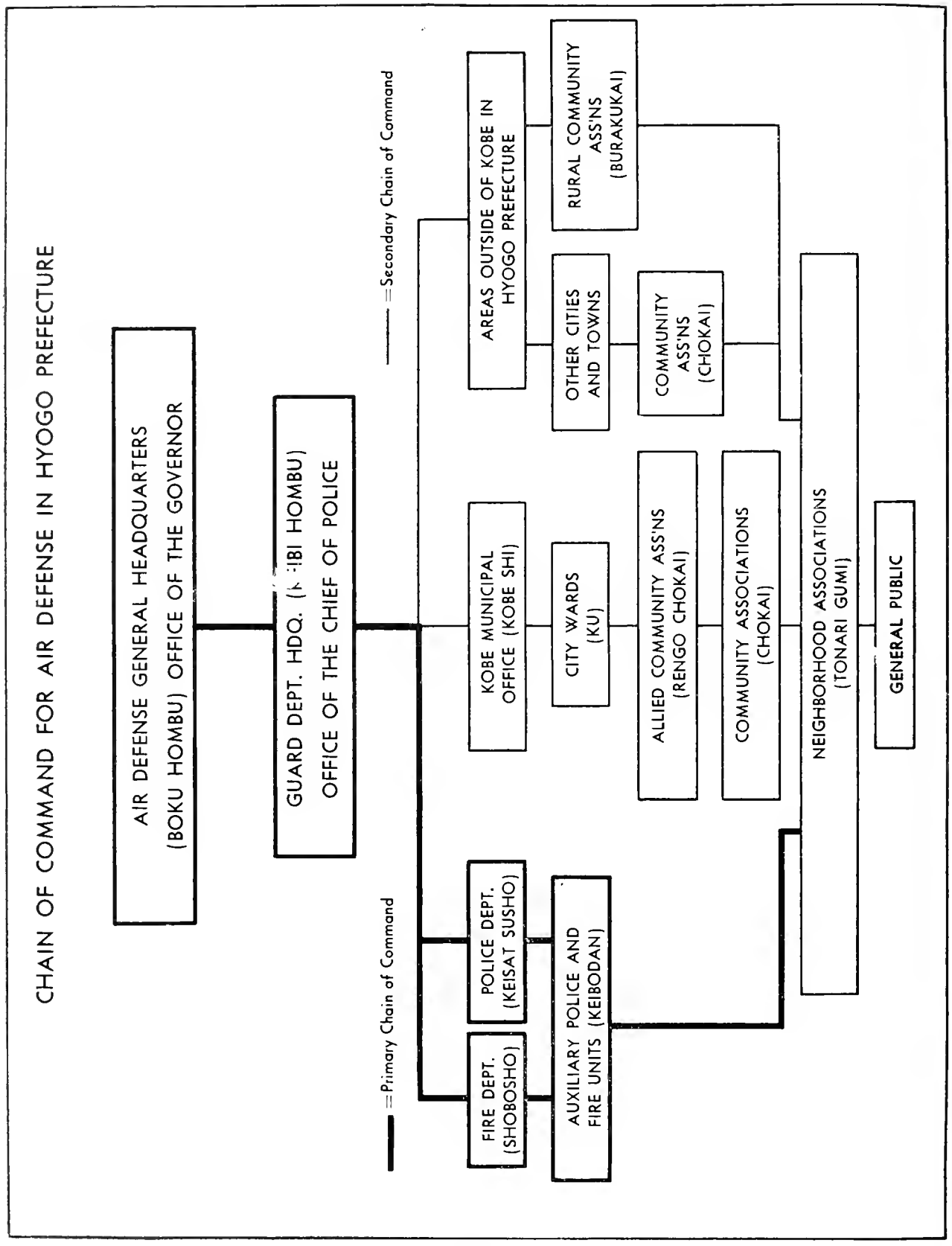
In practice, the Chief of the Metropolitan Police board did not at any time receive an order from the Chief of the Air Defense Headquarters, nor did he recognize its authority during actual raids.

EXHIBIT B-9


CHAIN OF COMMAND FOR AIR DEFENSE IN THE TOKYO METROPOLITAN DISTRICT AS IT ACTUALLY OPERATED DURING RAIDS
CHIEF METROPOLITAN POLICE BOARD
STAFF CHIEF OF POLICE BUREAUS
FIRE BUREAU
POLICE AFFAIRS BUREAU
SPECIAL GUARD BUREAU
REGULAR FIREMEN AT FIRE STATIONS
REGULAR POLICEMEN AT POLICE STATIONS
MOBILE POLICE UNITS RESCUE SQUADS
AUXILIARY POLICE AND FIRE UNITS (KEIBODAN)
FIRE ARM
AUXILIARY POLICE
GUARD ARM
NEIGHBORHOOD GROUPS (TONARI GUMI)
FIRE FIGHTING
MAINTENANCE OF ORDER
GENERAL SUPERVISION OF AIR DEFENSE OPERATIONS
RESCUE WORK AND OTHER EMERGENCY ASSIGNMENTS


WARTIME ADMINISTRATIVE ORGANIZATION OF HYŌGO PREFECTURE
HYŌGO PREFECTURAL OFFICE (KEN CHO)
OFFICE OF THE GOVERNOR (CHIJI)
SECRETARIAT (CHIJIKWAN BŌ)
PUB. WORKS DEPT. DOBOKUBU
GEN. ADM. DEPT. NAISEIBU
POLICE DEPT. KEISATSUBU
FIRST DEPT. OF ECONOMIC AFFAIRS KEIZAIDAIICHIBU
SECOND DEPT. OF ECONOMIC AFFAIRS KEIZAIDAINIBU
GUARD SECTION KEIBIKA
CRIMINAL SECTION KEIJIKA
LABOR SECTION RŌSEIKA
NAT. MOBILIZATION SECTION KOKUMINDŌINKA
BUILDING INSPECTION SECTION SHISETUKA
LABOR INSURANCE SECTION HOKENKA
GUARD RESCUE UNIT KEIBITAI
POLICE INSPECTORS KANSATSUKANSHITSU
INTELLIGENCE SECTION JŌHŌKA
FOREIGN AFFAIRS SECTION GAIJIKA
POLICE AFFAIRS SECTION KEIMUKA
SPECIAL POLICE SECTION TOKUBETUKŌTŌKE ISATSUKA
TRANSPORTATION SECTION TUSŌKA
ECONOMIC CONTROL SECTION KEIZAIHOANKA
AIR DEFENSE SECTION BŌKŪKA
RURAL ADM SECTION NŌSEIKA
FARM SECTION NŌMUKA
DOMESTIC ANIMAL SECTION CHIKUSANKA
MARINE PRODUCTS SECTION SUISANKA
FOOD SUPPLY SECTION SHOKURYŌKA
ARABLE LAND SECTION KŌCHIKA
SERICULTURE SECTION SANSHIKA
PERSONNEL SECTION JINJIKA
RESEARCH SECTION CHŌSAKA
FINANCE SECTION KWAIKEIKA
BUDGET SECTION GIJIKA
PUBLIC BUILDINGS SECTION EIZENKA
LOCAL AFFAIRS SECTION CHIHŌKA
TRADE AND INDUSTRY SECTION SHŌKŌKA
MATERIAL CONTROLS SECTION BUSSHITSUSEIKA
METAL SALVAGE SECTION KINZOKUKAISHŪKA
FORESTRY SECTION RINMUKA
SHRINES AND TEMPLES SECTION SHAIHEIJIKA
SECTION OF SCHOOLS KYŌGAKUKA
PUBLIC MORALE SECTION SHINKŌKA
PUBLIC WELFARE SECTION KŌSEIKA
HOUSING SECTION JŪTAKUKA
SANITATION SECTION EISEIKA
ENGINEERING SECTION DOBOKUSŌMUKA
PUBLIC HIGHWAYS SECTION DŌROKA
RIVER WORKS SECTION KASENKA
SAND DIKING SECTION SABŌKA
HARBOR WORKS SECTION KŌWANKA
CITY PLANNING SECTION TOSHIKEIKAKUKA
NOTE:
Directly involved in air defense.
O Closely related to air defense.


ORGANIZATION OF THE AIR DEFENSE HEADQUARTERS
OF HYOGO PREFECTURE
AIR DEFENSE GENERAL HEADQUARTERS NATIONAL (BŌKŪ SŌHOMBU)
CHŪBU (MIDDLE AREA) MILITARY DISTRICT
COORDINATION
ADVICE AND ASSISTANCE
HYŌGO PREFECTURE AIR DEFENSE GENERAL HEADQUARTERS (BŌKŪ HOMBU) OFFICE OF THE GOVERNOR
OSAKA DEFENSE OFFICE
MAIZURU NAVY YARD
GUARD DEPARTMENT HEADQUARTERS (KEIBI HOMBU) OFFICE OF THE CHIEF OF POLICE
GENERAL EMERGENCY ADMINISTRATION
PUBLIC WORKS HEADQUARTERS
COMMODITIES HEADQUARTERS
PROVISIONS HEADQUARTERS
FOOD
CLOTHING
FUEL
HOUSING
EMERGENCY FEEDING
PUBLIC BLDGS SECTION SHISETUKA
EMERG. LABOR MOBILIZATION SECTION RŌSEIKA
POLICE AFFAIRS SECTION KEIMUKA
GUARD RESCUE UNIT KEIBITAI
ECONOMIC ENFORCEMENT SECTION KEIZAI-HOANKA
EMERGENCY TRANSPORTATION SECTION YUSŌKA
GUARD SECTION KEIBIKA
AID DEFENSE SECTION BŌKUKA
EMERGENCY CONSTRUCTION
POST RAID CLEARANCE
PUBLIC MORALE
EMERGENCY HOUSING
FIRST AID AND MEDICAL CARE
STUDENT EVACUATION
EMERGENCY WELFARE
PROTECTION OF SCHOOLS
Dotted lines = Liaison


CHAIN OF COMMAND FOR AIR DEFENSE IN HYOGO PREFECTURE
AIR DEFENSE GENERAL HEADQUARTERS
(BOKU HOMBU) OFFICE OF THE GOVERNOR
GUARD DEPT. HDQ. (KEIBI HOMBU)
OFFICE OF THE CHIEF OF POLICE
= Primary Chain of Command
= Secondary Chain of Command
FIRE DEPT. (SHOBOSHO)
POLICE DEPT. (KEISAT SUSHO)
AUXILIARY POLICE AND FIRE UNITS (KEIBODAN)
KOBE MUNICIPAL OFFICE (KOBE SHI)
CITY WARDS (KU)
AREAS OUTSIDE OF KOBE IN HYOGO PREFECTURE
OTHER CITIES AND TOWNS
RURAL COMMUNITY ASS'NS (BURAKUKAI)
COMMUNITY ASS'NS (CHOKAI)
ALLIED COMMUNITY ASS'NS (RENGO CHOKAI)
COMMUNITY ASSOCIATIONS (CHOKAI)
NEIGHBORHOOD ASSOCIATIONS (TONARI GUMI)
GENERAL PUBLIC

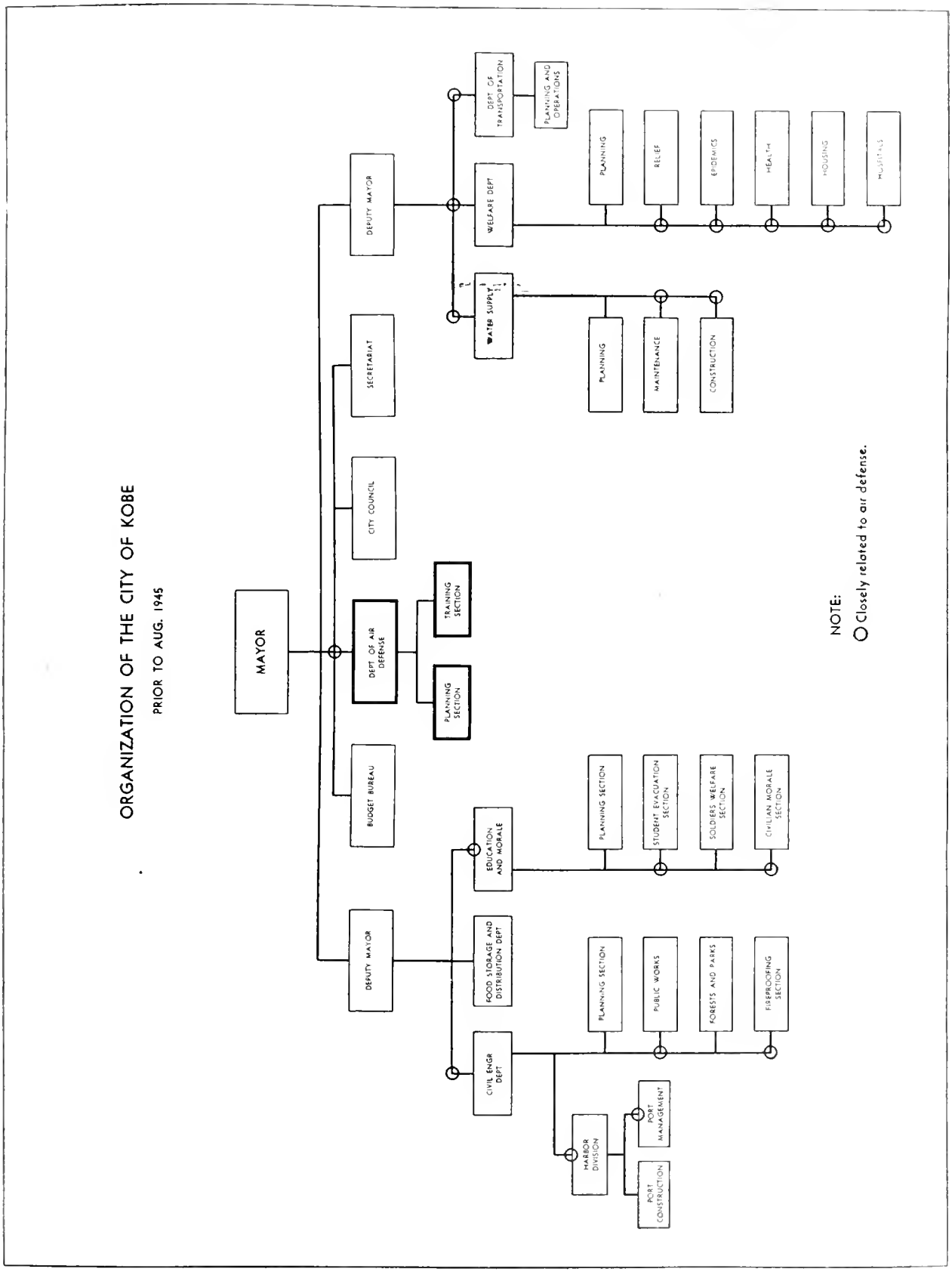

ORGANIZATION OF THE CITY OF KOBE
PRIOR TO AUG. 1945
MAYOR
DEPUTY MAYOR
SECRETARIAT
CITY COUNCIL
BUDGET BUREAU
DEPT OF AIR DEFENSE
TRAINING SECTION
PLANNING SECTION
DEPUTY MAYOR
EDUCATION AND MORALE
PLANNING SECTION
STUDENT EVACUATION SECTION
SOLDIERS WELFARE SECTION
CIVILIAN MORALE SECTION
FOOD STORAGE AND DISTRIBUTION DEPT
CIVIL ENGR DEPT
PLANNING SECTION
PUBLIC WORKS
FORESTS AND PARKS
FIREPROOFING SECTION
HARBOR DIVISION
PORT MANAGEMENT
PORT CONSTRUCTION
WELFARE DEPT
PLANNING
RELIEF
EPIDEMICS
HEALTH
HOUSING
HOSPITALS
DEPT OF TRANSPORTATION
PLANNING AND OPERATIONS
WATER SUPPLY
PLANNING
MAINTENANCE
CONSTRUCTION
NOTE:
O Closely related to air defense.

EXHIBIT C–1

The National Air-Defense Law (No. 47, 5 April 1937)

Article 1. In this law air-raid defense is defined to mean the prevention of dangers which may arise from aircraft raids in time of war or national emergency or the defensive measures taken by the army and navy to minimize such dangers, the blackout regulations, fire control, gas defense, shelter and medical aid measures activated by civilian personnel, and the requisite visual observation, communications and warning devices. The air-raid defense plan is defined as the execution of air-raid defense and the maintenance of material and equipment necessary to implement it.

Article 2. The air-raid defense plan, by imperial direction, will be set up by the district commander (in Tokyo Fu the chief of police will be included, and hereafter this exception will be repeated) or by air-raid defense committee meetings, said committees being composed of city, town, or village leaders selected by the district leader. The organization must receive the approval of the district commander or of the competent minister.

Article 3. The competent minister, by imperial direction, may set up air-raid defense plans for large businesses or enterprises by selecting civilian personnel when such step seems necessary.

Air-raid defense plans conceived under the above paragraph must receive the approval of the competent minister.

Article 4. Persons who have formulated air-raid defense plans will carry out the air-raid defense based on those plans or the maintenance of material and equipment necessary to carry it out.

Article 5. The district commander, by imperial direction, will have the supervisor or owner of special establishments connected with air-raid defense plans maintain the material or equipment necessary to carry out air-raid defense. They can use such material or equipment as is necessary when conducting air-raid defense.

Article 6. The district commander, by imperial direction, can utilize, in carrying out air-raid defensive measures concerned with poison gas, medical aid, etc. all persons having special talents.

As in Article 3, Paragraph 1, the designers of air-raid defense plans can press these workers into the service.

Article 7. Items pertaining to motivation and termination of air-raid defense measures shall be in accordance with imperial direction.

Article 8. In the event that a blackout is to be put in effect, the person responsible for the blackout shall see to it that all equipment which gives off light shall be properly concealed, regardless of whatever other regulations may exist.

Article 9. While air-raid defense measures are in effect, the district commander or city, town, village leader may, in an emergency, make use of private land and dwellings, requisition material, and press local persons into air-raid defense work.

Orders which are issued in accordance with Articles 5 and 6 of the Administrative Regulations shall be based on the foregoing paragraph and will be applicable when the chief executive of the city, town or village presses persons into service.

Article 10. The competent minister may order those charged with setting up air-defense plans to conduct air-defense practice based on all or a part of the plans.

In accordance with the preceding paragraph, when air-defense practice is being carried out those charged with setting up air-defense plans in accordance with Article 3, Paragraph 1, can order those assigned to carry out the plans to participate in the air-defense practice.

In accordance with the first paragraph, when blackout practice is being carried out, those in charge of equipment or apparatus emitting light within the practice area ordered, and similar persons, will extinguish such light in spite of any other regulations to the contrary.

Article 11. When necessary, in order to make inspections related to air defense, the competent minister, the district commander, or the city, town or village leader can, under the terms of the Imperial Rescript, order persons concerned to provide materials, and can direct government officials and officials to enter places of interest to make investigations. This does not apply to items or equipment of a secret nature in homes or places of business.

In accordance with the preceding paragraph,

the local government official shall be informed in advance when a place is to be entered.

The above-mentioned government official or official shall carry a permit when entering a place of interest under the provisions of Paragraph 1.

Article 12. In the event that a person engaged in air-raid-defense work in accordance with Article 6 and/or Paragraph 1, Article 9, is injured, becomes ill, or is killed in line of duty, the district commander or city, town, village leader shall pay for the person's hospitalization, medical care, or funeral expenses.

Article 13. When, in accordance with Article 5, establishments and material needed for air-raid defense are requisitioned by the district commander; or when, in accordance with Paragraph 1, Article 9, the district commander or chief executive of city, town, or village requisitions or uses houses or material, losses will be compensated for at a rate to be established by imperial direction.

In the event that a person who is to be compensated for reasons stated above is dissatisfied with the rate of compensation, or if six (6) months have elapsed and no notification for compensation is received, said person may sue in court within six (6) months after notification or from the expiration of the six-month period.

Article 14. District commanders will designate, in accordance with Section 2, Article 6, persons with special qualifications to take charge of air-raid measures. In the event that Section 1 of Article 6 and/or Section 2, Article 6, is put in effect, planners and workers involved may be paid actual cost involved in accordance with imperial orders applicable to such a contingency.

Article 15. Expenses involved in air-raid defense planning, in actual air-raid defenses, and in materials needed for the above will be assumed by the prefectural government, if any, or if the above measures were ordered by the prefectural government; and by the village, town, or city if they were ordered by the chief executive of village, town or city.

For special defense measures covering private property as described in Article 5, expenses for same will be assumed by the individual involved.

Article 16. Rules regulating the Air-Raid Defense Committee will be by imperial direction.

Article 17. The National Treasury will assume one-half (½) or less of the expenses for the following:

1. Expenses incurred by the prefectural or municipal governments for air-raid-defense measures prescribed in Paragraph 1, Article 3.

2. The expenses incurred by private individuals for protection of property as described in Paragraph 2, Article 15.

3. Expenses incurred by prefectural or municipal governments involving the Air-Raid Defense Committee.

Article 18. A special qualified person may be imprisoned for a period not to exceed three (3) months or fined not to exceed 100 yen for disobeying, without cause, the orders of the district commander.

Article 19. Violators of Article 8 shall be fined 300 yen or less, and/or imprisoned.

The same punishment will be applied to persons who refuse, without cause, to produce the material in accordance with Paragraph 1, Article 11; or one who produces false material; or one who refuses or hinders the entrance and inspection by competent officials.

Article 20. Chiefs of village or town associations which assume all the governmental duties of a village or town, or such an association which aids or cooperates with the village or town government, will be considered in this set of laws as the equivalent of the chief executive of a village or town.

In areas in which no organizations exist, regulations in this set of laws which are applicable to towns and villages will be applicable to such towns and villages, and those which are applicable to the chief executive of towns and villages will be applicable to such towns and villages.

Article 21. Air-raid-defense measures which are to be operated by the State will be in accordance with imperial direction.

Article 22. In event that these regulations are to be applied to Korea or Formosa, special orders may be effected by imperial direction.

The date of activating these laws will be ordered by imperial direction.

(Promulgated 5 April 1937 and activated 11 April 1937).

EXHIBIT C–2

Air-Defense Law Enabling Act and Amendments Thereto

Article 1. Matters to be determined according to the regulations of Article 1 of the Air-Defense Law:

1. Clearing (tidying up, etc.) the affected area. (Henceforth termed "Clearing.")

2. Supply of drinking water. (Henceforth termed "Water Supply.")

3. Defense by balloons, etc. (Henceforth termed "Barrage balloon defense.")

4. Emergency transport.

5. Regulating emergency labor.

Section 2 of Article 1. The competent minister will establish air-defense plans for the nation or for metropolitan districts (To), circuits (Do), metropolitan prefectures (Fu) and prefectures (Ken), and for matters that are considered important. The War Minister and Navy Minister will determine standards for establishing air-defense plans, to synchronize these plans with the home defenses of the Army and Navy, and will then inform the competent minister. The Minister of Home Affairs will submit to other competent ministers the necessary particulars for establishing air-defense plans.

Section 3 of Article 1. Prefectural governors (includes chief of police in Tokyo) will create air-defense plans for metropolitan districts, circuits, metropolitan prefectures and prefectures or for various cities (Shi), towns (Machi) and villages (Mura) and for other matters that are considered important. Prefectual offices other than those of the prefectural governors will establish air-defense plans for matters under their jurisdiction. Mayors of cities, towns and villages, who are designated according to the regulations of Article 2 of the Air-Defense Law, will establish air-defense plans for their respective districts on matters to be planned and on other matters that are considered important.

Section 4 of Article 1. Army commanding officers, naval district commandants or guard district commandants will determine standards for establishing air-defense plans, will synchronize these plans with the home defenses of the Army and Navy, and will then inform the affected prefectural offices.

Article 2. The businesses or installations that are referred to in Paragraph 1, Article 3 of the Air-Defense Law will be businesses or installations connected with the following: factories, mines, railways, street car lines, water works, electric power, gas, petroleum, electrical communication, marine transportation, automobile transportation and aviation.

Article 3. The materials or equipment which can be installed according to Paragraph 1, Article 5 of the Air-Defense Law are defined as follows:

1. Necessary blackout facilities for electric power installations, factories, railways, street cars, electrical communication installations, hospitals, medical clinics, and ships.

2. Necessary camouflaging and bomb-proofing, and emergency repair work for water works, water mains, electric power and gas installations, fuel tanks, factories, mines, railways, street cars, electrical communication installations, highways, bridges, harbors, dams, dikes, locks, warehouses, schools, hospitals, medical clinics, skyscrapers and airfields.

3. Necessary fire-fighting and fire-proofing equipment for water works, water mains, electric power and gas installations, fuel tanks, factories, mines, electrical communication installations, schools, warehouses, hospitals, and medical clinics.

4. Necessary water supply, sanitation, allocation of emergency materials, epidemic prevention, rescue work, shelters and gas protection for buildings with basements, subways, skyscrapers, squares, parks, warehouses, factories, department stores, medical clinics, hospitals, schools and theaters.

5. Necessary barrage balloon defense for factories, mines, harbors, and skyscrapers.

The facilities and materials that will be available for general use as stipulated in Paragraph 2, Article 5 of the Air-Defense Law are as follows:

(1) Necessary items for observation and communication for skyscrapers, ships, and communication installations.

(2) Necessary alarm devices for installations with sirens.

(3) Necessary water supply, sanitation, distribution of emergency materials, epidemic prevention, rescue work, refuge and gas protection for schools, shrines, halls, theaters, warehouses, hospitals, medical clinics, bath houses, department stores, skyscrapers, subways, buildings with basements, factories and other buildings possessing effective vacant areas for refuge (shelter), parks, and athletic grounds.

Section 2 of Article 3. The competent minister has the authority to order the transfer of essential materials subject to the national mobilization in conformity with the regulations of Section 7, Article 5 of the Air-Defense Law.

The competent minister has the authority to order the conversion, dispersal and transfer of the following businesses and installations and

also to order the supplies, facilities and installations necessary for their conversion, as provided in Section 7, Article 5 of the Air-Defense Law.

1. All businesses and installations participating in the production, manufacture, repair, storage and distribution of these vital materials which are subject to national mobilization.

2. All businesses and installations connected with electricity, gas and water works.

3. All businesses and installations connected with transportation, communication, and trade.

The prefectural governors have the authority to order the transfer of the following materials as provided in Section 7, Article 5 of the Air-Defense Law.

1. All detonating, explosive, and combustible materials.

2. All poisonous materials.

3. Foodstuffs, fuels and other materials subject to national mobilization.

All lands, structures and materials that can be utilized or expropriated as provided in Section 8, Article 5 of the Air-Defense Law are as follows:

1. All lands and structures for preparation of observation posts, shelters, relief stations, storage for emergency materials and air-defense materials, and garbage plants.

2. All lands for fire breaks, water works, water mains, air-raid shelters, water tanks and wells.

All lands, structures and materials that can be utilized as provided in Section 8, Article 5 of the Air-Defense Law are as follows:

1. All lands and structures for construction of communication lines.

2. All lands, equipment and accessories for retaining gear to maintain barrage balloon sites.

Section 4 of Article 3. The following sections of the Expropriation, Utilization and Supervision of Land and Structures Act are applicable *mutatis mutandis* when prefectural governors utilize or expropriate lands, structures or materials as provided in Section 8, Article 5 of the Air-Defense Law.

1. Paragraph 1, Article 3.

2. Articles 4 through 6 (excluding those parts having to do with public notices in the Official Gazette).

3. Articles 8 through 11.

4. Paragraphs 1 and 3, Article 12.

5. Article 15.

6. Paragraphs 1 and 2, Article 16.

7. Articles 17 and 23.

However, Article 15, Paragraph 2 of Article 16, and Article 17 of the act in question, which are cabinet ordinances, will be considered orders.

All necessary matters concerned with expropriation and utilization under the preceding paragraph, excluding those stipulated in the said paragraph, will be determined by orders.

Section 5 of Article 3. The Minister of Home Affairs may authorize and certify, through representatives selected by him or the prefectural governors, residential changes to designated areas as provided in Section 9, Article 5 of the Air-Defense Law.

Section 6 of Article 3. The Minister of Home Affairs may authorize, through the prefectural governors, business removal to or foundation in designated areas, as provided in Section 9, Article 5 of the Air-Defense Law.

Section 7 of Article 3. The Minister of Home Affairs may order all persons to move out of a designated area, except those persons who are required to reside there in order to execute their business, official or subject to the national mobilization, or because of other special reasons, as provided in Section 9, Article 5 of the Air-Defense Law.

The Minister of Home Affairs may order the managers or owners of businesses that are located in designated areas to move to other locations, except those who are required to reside in such areas to execute their business for the national mobilization or for other special reasons as provided in Section 9, Article 5 of the Air-Defense Law.

Section 8 of Article 3. When business locations and residences must be supplied in areas designated in Section 10, Article 5 of the Air-Defense Law, to persons who have had to move elsewhere for various reasons, the prefectural governors, as provided in Section 6, Article 5 of the same law, may issue the necessary orders to owners and managers for occupation, in all or part, of buildings falling under any one of the following classifications, as provided in the Air-Defense Law.

1. Vacant buildings.

2. All buildings having ample space in view of current utilization.

3. All public boarding houses, dormitories, hotels, and lodging houses.

4. All club houses, assembly halls, show houses, restaurants and brothels.

The necessary orders for the preceding clauses will be as follows:

1. Orders for notifying prefectural governors when changing tenants or landlords in buildings stipulated in items 1 and 2 above; and orders for obtaining permission to make such changes.

2. Orders for notifying the prefectural governors when buildings which are stipulated in items 3 and 4 above are to be utilized in ways other than those stipulated in relevant items.

3. Orders for limited rental periods for persons designated by the prefectural governors.

4. Orders in regard to condemnation moving and rebuilding restrictions.

Prefectural governors, in conformity with the regulations of Section 10, Article 5 of the Air-Defense Law may issue the following orders regarding dwellings (including dwellings also used as stores or offices, but excluding those stipulated in Item 3, Paragraph 1. This definition holds for remainder of this Article.), when the owners or managers of said dwellings desire to change the status of the dwellings, landlord, tenant, or use, and when supplying such dwellings to persons stipulated in Paragraph 1, for business or residence:

(1) Orders pertaining to obtaining permission from and giving notification to the prefectural governors.

(2) Orders pertaining to priority in renting for fixed periods to persons designated by the prefectural governors.

(3) Orders pertaining to condemnation, moving, and rebuilding restrictions.

The orders which the prefectural governors may issue in regard to renting living quarters (excluding empty houses and the like) for the purpose of residence as stipulated in the preceding paragraph, will be limited to cases in which the entire said building is to be used by persons of the same household. However, this restriction does not apply when more than one family can be quartered in the building.

Section 9 of Article 3. When it is necessary to maintain, in areas designated in Section 10, Article 5, Air-Defense Law, facilities which are especially important for public welfare in regard to air defenses, and which have unavoidably been transferred owing to stipulations in Section 6, Article 5, Air-Defense Law, or for other reasons, and when said facilities must be supplied, the prefectural governors may issue orders to the owners or managers of such buildings as are deemed suitable for accommodating such facilities, as stipulated in the Air-Defense Law, to rent the said buildings, for a specified time, to the owners or managers of the said facilities.

Section 10 of Article 3. When rental of a building is ordered by the prefectural governors, as stipulated in the preceding two sections, the owner of the said building may request the tenant to purchase the said building, if the rental period is to be in excess of 3 years.

Section 11 of Article 3. Prefectural governors in conformity with Section 10, Article 5, Air-Defense Law, may order the owners of buildings to transfer said buildings to persons designated by the Minister of Home Affairs as connected with Public Corporations (Kokyo Dantai), etc., rather than condemn them, as stipulated in Section 6, Article 5, Air-Defense Law, and may order the receivers to condemn the said buildings.

Section 12 of Article 3. When orders to transfer or rent a building have been issued, or when a purchasing request has been made, as stipulated in the preceding four sections, the terms for rental, transfer, or purchase will be settled by the parties concerned. Prefectural governors may establish necessary decisions relative to the preceding when the parties cannot reach an agreement or when discussions cannot be held.

The Minister of Home Affairs will make other necessary decisions concerning Article 3, Sections 1 through 12 inclusive.

Article 4. Persons with special skill as stipulated in Paragraph 1, Article 6, Air-Defense Law will be defined as follows:

1. Doctors, dentists, veterinarians, pharmacists, midwives, nurses and practical nurses.

2. Persons other than these as determined by the prefectural governors.

Employees of the organizers of the air-defense plans, as stipulated in Paragraph 1, Article 3, Air-Defense Law, who are also to engage in air-defense duties in conformity with Paragraph 3, Article 6, Air-Defense Law, or other persons with legitimate reasons need not engage in air-defense duties as stipulated in Paragraphs 1 and 2, Article 6, Air-Defense Law.

Section 2 of Article 4. When issuing orders as stipulated in Paragraphs 1 or 2, Article 6, Air-Defense Law (includes application of Paragraph 2, Article 10, Air-Defense Law) and orders or appointments as stipulated in Section 2, Article 6, Air-Defense Law, to persons to whom these regulations are applicable, the following will be

taken into consideration: place of employment and residence, occupation, level of skill and education, physical condition, family condition, etc.

Section 3 of Article 4. The prefectural governors may order persons with special skill or educational training who are residing within metropolitan districts, circuits, metropolitan prefectures and prefectures to engage in air defense which is conducted by organizers of the air-defense plan (designated in Paragraph 1, Article 3, Air-Defense Law,) by prefectural governors or by mayors of cities, towns and villages as stipulated in Paragraphs 1 and 2, Article 6, Air-Defense Law.

The regulations of the preceding paragraph will be applied when conducting air-defense training as stipulated in Article 10, Air-Defense Law.

Section 4 of Article 4. Orders (as stipulated in Paragraphs 1 and 2, Article 6, Air-Defense Law) and appointments (as stipulated in Section 2, Article 6, Air-Defense Law) will be transmitted by directive or appointment.

The necessary matters in regard to the directives and appointments of the preceding paragraph will be determined by orders.

Article 5. The commencement and termination of air defense will be ordered by the Minister of Home Affairs (for ships at sea, by the Minister of Transportation and Communication).

The orders of the preceding paragraph will be issued to relevant prefectural offices by the Minister of Home Affairs, to ships at sea by the Minister of Transportation and Communication, to relevant mayors of cities, towns, and villages and organizers of the air-defense plan (as stipulated in Paragraph 1, Article 3, Air-Defense Law) by prefectural governors upon notification from the Minister of Home Affairs.

Article 6. When the order to initiate air defense is given as stipulated above, observation and communication related to it will be immediately carried out and other matters deemed necessary from the standpoint of air defense will be readied and executed according to circumstances.

Obervation and the communication related to it will be continued until orders terminating air defense are given as stipulated above.

Article 7. When air defense is being carried out, the following types of aircraft warnings are dispatched:

1. Warning. When there is fear of air raids.

2. Warning cancelled. When there no longer is fear of air raids.

3. Air-raid warning. When there is danger of air raids.

4. Air-raid warning cancelled. When there no longer is danger of air raids.

Army commanding officers, division commanders, fortress commanders, naval district commandants or guard district commandants (henceforth termed army-navy commanders) cognizant of home defense in certain areas, or appointed persons will dispatch the aircraft warnings referred to above.

Section 2 of Article 7. When air defense demands such steps the Minister of Home Affairs may, in certain areas, restrict or prohibit fleeing to escape the perils of air attack, as provided in Section 3, Article 8, Air-Defense Law. This restriction does not, however, apply to the following refugees:

1. Children under seven, or primary pupils in the national school system (including other corresponding schools).

2. Pregnant women.

3. Persons unable to participate in air defense, e. g. persons over sixty-five, persons sick or wounded, persons deformed or chronically ill.

4. Persons required to care for the above.

The scope of subparagraph 4 immediately above will be determined by the Minister of Home Affairs.

Section 3 of Article 7. The Minister of Home Affairs may, depending on circumstances, order persons not actively engaged in air defense to flee, when such a course is deemed necessary and when air defense is being conducted, as provided in Section 3, Article 8, Air-Defense Law. When such orders are given, he will point out requisite safety factors, e.g. the destination of the flight, the method of flight, the persons to flee.

Section 4 of Article 7. When the prefectural governors issue orders as stipulated in Section 4, Article 8, Air-Defense Law, then Section 8 of Article 3, Section 12 of Article 3, and Section 13 of Article 3 will be correspondingly applied. (TN: Section 8, 12, and 13, Article 3, presumably of this Act.) The period for issuing orders for sheltering the refugees stipulated in Section 3, Article 8, Air-Defense Law, will not exceed the period of flight.

Section 5 of Article 7. The Minister of Home Affairs will designate those activities which are subject to prohibition or restriction, under Sec-

tion 5, Article 8, Air-Defense Law, because they increase the danger from air raids to a pronounced degree or because they gather large masses of people together (excepting meetings designated under paragraph 2).

Activities which may be ordered to continue or to reconvene as provided in Section 5, Article 8, Air-Defense Law, follow:

1. Activities concerned with the allocation of medicines and consumer goods necessary for life.
2. Activities concerned with restaurants.
3. Activities concerned with medical treatment.
4. Activities concerned with transportation and communications.

Orders in Section 5, Article 8, Air-Defense Law, place a time limit on these restrictions.

Article 8. Persons affected by Paragraph 1, Article 11, Air-Defense Law, will be owners or managers of places of business such as: buildings specified in Section 2 of Article 5, Section 4 through Section 6 of Article 5, and Section 4 of Article 8, (including those under construction); buildings specified in Section 8 of Article 3 (including cases which apply *mutatis mutandis* to Section 4 of Article 7), Section 9 of Article 3, and Section 11 of Article 3; real estate, factories, and articles specified in Sections 2 and 3 of Article 3; businesses or installations specified in Article 2, and Section 2 of Article 3; special installations specified in Article 3; or offices specified in Section 6 and Section 7 of Article 3, etc.

Affidavits for Paragraph 3, Article 11, Air-Defense Law, will follow the form illustrated in the annexed model. (cf. Translator's Note on Page 228).

Article 9. Losses which are to be indemnified are limited to losses sustained in the usual manner.

Persons to receive compensation under the above are limited to the following: persons who own land, factories, or buildings (including those under construction; henceforth in this article ditto) which are subject to Paragraphs 1 through 3, Article 13, Air-Defense Law, or things or factories on those lands, etc., and persons who possess rights other than proprietary rights in such real property; and owners of land on which are located buildings which have been condemned under Section 6, Article 5, Air-Defense Law; and persons who possess rights other than proprietary rights in such real property.

For preferential rights, rights of pledge, and mortgages on lands, buildings, factories, or things, the prefectural governors will post reparations for transfer to settle the claim.

The holders of preferential rights, rights of pledge, and mortgages may exercise their rights against the posted sum above.

The Minister of Home Affairs will determine particulars relating to reparations which are not determined in the above four paragraphs.

Article 10. The prefectural governors will determine necessary matters relative to the actual compensation which is stipulated in Article 14, Air-Defense Law, upon receipt of authorization from the Minister of Home Affairs when the prefectural governors handle the compensation. Organizers of the air-defense plans who are provided for in Paragraph 1, Article 3, Air-Defense Law, will determine such necessary matters upon receipt of authorization from the prefectural governors when the mayors of cities, towns, and villages or the organizers handle the compensation.

Article 11. Expenses for fireproofing wooden buildings as stipulated in Section 2, Article 5, and Section 3, Article 5, Air-Defense Law, will be the responsibility of the buildings' owners as ordered.

When wooden buildings in specially designated urban areas are fireproofed by persons other than the owners, the expenses for fireproofing will be the responsibility of the owners of the buildings thus improved as ordered. The allocation of responsibility (ratio and method) will be determined by discussion with these owners when the improvement has been authorized under Section 2, Article 5, Air-Defense Law, or by prefectural governors when the improvement has been authorized under Section 3, Article 5, Air-Defense Law.

When agreement cannot be reached or discussions cannot be held the prefectural governors will arbitrate.

These agreements must receive the approval of the prefectural governor or they are invalid.

Article 12. Government subsidies provided for under Article 17, Air-Defense Law, will be granted for exact expenses as assessed by the Minister of Home Affairs, but gift and other like forms of income will be deducted from the amount to be subsidized.

Subsidies granted by the preceding paragraph may be recalled, in whole or part, under the following conditions:

1. When original plans have not matured be-

cause the allotment of equipment or materials has been changed or abrogated.

2. When the terms of the subsidy have been violated.

Section 2 of Article 12. The proportion subsidized as stipulated in Article 17, Air-Defense Law, will be determined as follows:

1. The total sum for expenditures necessary for air defense as stipulated in Paragraph 1, Article 15, Air-Defense Law, and for implementing relief work.

2. One-fourth to two-thirds of the expenditures necessary for requisite maintenance of installations and materials related to air defense, as stipulated in Paragraph 1, Article 15, Air-Defense Law.

3. One-half of the following expenditures: expenditures necessary for the establishment of, activation (excluding relief work) of, or training for air-defense plans stipulated in Paragraph 1, Article 15, Air-Defense Law; expenditures for relief funds specified in Paragraph 5, Article 15, Air-Defense Law, shared by the organizers of air-defense plans as provided in Paragraph 1, Article 3, Air-Defense Law; expenditures for bounties specified in Article 16, Air-Defense Law, shared by metropolitan districts, circuits, metropolitan prefectures, prefectures or cities, towns, and villages.

4. One-third of expenditures for necessary maintenance of installations or materials as stipulated in Paragraph 2, Article 15, Air-Defense Law, when said maintenance is performed by a public corporation (Kokyo Dantai); one-half of such expenditures when said maintenance is performed by other agents.

5. Four-fifths of the total sum of the following expenditures: expenditures incurred in removals stipulated in Paragraph 6, Article 15, Air-Defense Law, which are shared by metropolitan districts, circuits, metropolitan prefectures, and prefectures: expenditures made as compensation for losses as provided in Paragraph 7, Article 15, Air-Defense Law, when the persons are under orders, relative to the use of the buildings as stipulated in Paragraph 4, Article 8, Air-Defense Law.

6. From two-thirds to the total sum of expenditures incurred as compensation for losses as stipulated in Paragraph 7, Article 15, Air-Defense Law (excluding compensations dealt with in Sub-paragraph 5 above and Sub-paragraph 7 following).

7. Two-thirds of expenditures incurred as compensation for losses as stipulated in Paragraph 7, Article 15, Air-Defense Law, when the persons are under orders relative to the use of the buildings (including those under construction), as stipulated in Paragraph 4, Article 5, Air-Defense Law.

Article 13. The competent minister will inform the organizers of air-defense plans as defined in Paragraph 1, Article 3, Air-Defense Law, and prefectural offices of important matters pertaining to air-defense plans, and the prefectural governors will inform mayors of cities, towns, and villages who have been designated as stipulated in Article 2, Air-Defense Law, of such matters.

When so informed they will establish air-defense plans conforming to the suggestions made.

Article 14. Army-navy commanders will inform prefectural governors of important matters concerning organization of air-defense plans regarding outlines for lookout networks. The prefectural governors will inform organizers of air-defense plans as defined in Paragraph 1, Article 3, Air-Defense Law, and mayors of cities, towns, and villages who have been designated in Article 2, Air-Defense Law, of important matters concerning organization of air-defense plans regarding lands and buildings whose use should be restricted or prohibited because they are essential to the home defenses conducted by the army and navy.

When so informed they will establish air-defense plans conforming to the suggestions made.

When establishing air-defense plans, competent ministers other than the Minister of Home Affairs will confer with the Minister of Home Affairs; also the competent minister will confer with the Minister of the Army and the Minister of the Navy, and prefectural officers will confer with army-navy commanders on important particulars connected with synchronization with the home-defense plans of the army and navy.

Article 15. Government officers will confer with army-navy commanders about important particulars connected with synchronization with the home-defense plans of the army and navy when approving air-defense plans.

Article 16. The competent minister will confer with each relevant minister, the government offices with the relevant prefectural offices, on the following matters:

1. Matters pertaining to the use of dwellings,

lands, and things which fall under the air-defense plans and which are nationally supervised, when the said plans are up for approval.

2. Matters pertaining to necessary approval or authorization under other laws for supply or maintenance activities for installations or material, when air-defense plans are up for approval.

3. Appointments as stipulated in Paragraph 1, Article 3, Air-Defense Law, and approvals as stipulated in Paragraph 2 of the same.

4. Orders stipulated in Article 5, Air-Defense Law, for requisite approval or authorization under other laws for supply or maintenance activities for installations or material.

5. Orders stipulated in Section 6, Article 5 or Section 4, Article 5, Air-Defense Law, for requisite approval or authorization under other laws for condemnation or rebuilding of buildings (including those under construction).

6. Orders stipulated in Paragraph 1, Article 10, Air-Defense Law, to organizers of air-defense plans as defined in Paragraph 1, Article 3 of same.

7. Appointments as provided in Paragraph 1, Section 5, Article 7, Air-Defense Law.

Section 2 of Article 16. When air defense is being conducted, the Minister of Home Affairs may request requisite information concerning it from the competent minister; and the Ministers of the Army and the Navy may do the same to synchronize the air defense with the home-defense program of the army and navy.

When air defense is being conducted, army commanding officers, naval district commandants, or guard district commandants may request requisite information concerning it from relevant prefectural offices to synchronize the air defense with the home-defense program of the army and navy.

When the request is urgent, and there is not time to apply to the Ministers of the Army or Navy or to army-navy commanders through the machinery of the preceding two paragraphs, the prefectural governors may request requisite information concerning air defense from other prefectural offices; and division commanding officers, fortress commanding officers, other army commanding officers, or commanders designated by division commanding officers, or commandants of special fleets, or commanders designated by commandants of special fleets may make such requests to synchronize the air defense with the home-defense program of the army and navy.

Section 3 of Article 16. The function of competent minister stipulated in the Air-Defense Law and this Act (omitting Section 4 through Section 6 of Article 16) will be performed by the Minister of Home Affairs.

Section 4 of Article 16. The function of competent minister in Article 2 and Article 5 of the Air-Defense Law, and in Section 2 of Article 1, Article 13, Section 2 of Article 14, Paragraph 4 of Article 16, and Section 2 of Article 16 will be performed, for those matters indicated below, by those persons indicated below:

1. The function of competent minister for maintenance and camouflage, bomb protection, dispersal, removal, and emergency repairs for installations and material necessary for air defense of factories and business locations designated by the jurisdictional minister, will be performed by the said jurisdictional minister. (TN: The competent minister deals with specific problems which are part of more general problems falling under the jurisdictional minister, e.g. the Minister of Home Affairs is the jurisdictional minister for national elections, and the Minister of Justice is the competent minister for cases of graft uncovered in the elections.)

2. The Minister of Transportation and Communication will be considered the competent minister for the air defense of shipping; but shipping at anchor, omitting items in #3 below, will fall under the Minister of Transportation and Communication and the Minister of Home Affairs.

3. The function of competent minister will be performed by the Minister of Transportation and Communications for maintenance, camouflage, bomb protection, dispersal, removal, and emergency repairs for installations and materials (omitting those for fire protection and fire fighting in harbors) which are necessary for the air defense of railways, installations for trucking businesses, shipping harbors designated by the Minister of Transportation and Communication, navigation markers, aircraft, air route markers, airfields, and electric communication installations.

4. The function of competent minister for maintenance, camouflage, bomb protection, dispersal, removal, and emergency repairs for installations or material necessary for the air defense of roadbeds will be performed by the Minister of Home Affairs and the Minister of Transportation and Communication.

5. The function of competent minister for

maintenance, camouflage, bomb protection, dispersal, removal, and emergency repairs for installations or materials necessary for the air-defense of schools designated by the Minister of Education, will be performed by the Minister of Education and the Minister of Home Affairs.

6. The function of competent minister for regulation of quarantine and emergency service, their enforcement, and the maintenance of installations and materials for their enforcement will be performed by the Minister of Welfare.

7. The function of competent minister for allocation of materials for emergencies, the allocating process, and the maintenance of installations and materials necessary for such allocations will be performed by the jurisdictional minister administering the allocation of such materials.

8. The function of competent minister for relief work, clearing, and water supply, their activation, and the maintenance of necessary installations and materials for them will be performed by the Minister of Home Affairs and the Minister of Welfare.

9. The function of competent minister for emergency transportation will be performed by the Minister of Transportation and Communication.

When designating the competent minister in No. 1, No. 3, and No. 5 above, the Minister of Home Affairs will be consulted.

Section 5 of Article 16. The function of competent minister in Paragraph 1 of Article 3, Air-Defense Law, and Subparagraph 3 of Article 16, this act, above, will be performed for those matters indicated below by those persons indicated below:

1. By the Minister of Home Affairs for factories, and by the jurisdictional minister administering such factories.

2. By the Minister of Home Affairs and the Munitions Minister for installations or businesses connected with mines, electricity, gas, or petroleum.

3. By the Minister of Home Affairs and the Minister of Transportation and Communication for installations and businesses connected with railways, roadbeds, electric communications, sea transport, highways, and airways.

4. By the Minister of Home Affairs and the Minister of Welfare for water works.

Section 6 of Article 16. The function of competent minister stipulated in Section 7, of Article 5, Air-Defense Law, and in Section 2, Article 3, this Act, for installations or businesses connected with said installations, designated in Subparagraph 1 through 4, Paragraph 1 of Section 4 of Article 16, will be performed by the jurisdictional minister in compliance with the same Article; and the jurisdictional minister will also perform this function for the administration of materials included, subject to the national mobilization, and the allocation of those materials.

When the jurisdictional ministers stipulated in Subparagraph 1, the main text of Subparagraph 2, and Subparagraph 3 of Paragraph 1, Section 4, Article 16, and the jurisdictional minister for materials subject to the national mobilization as stipulated in the foregoing paragraph, are issuing orders as stipulated in Section 7, Article 5, Air-Defense Law, they will confer with the Minister of Home Affairs.

Section 7 of Article 16. The functions of prefectural offices which are provided for in Article 2, Air-Defense Law, and in Sections 3 and 4 of Article 4, Article 13, Section 2 of Article 14, and Section 2 of Article 16, all of this Act, will be performed by those persons listed below for those matters listed below; but in relation to other matters (excluding those designated by jurisdictional ministers who are provided for in Subparagraph 1 through 5, Paragraph 1, Section 4, Article 16 to deal with these matters), these functions will be performed by the prefectural governors.

1. By the chiefs of the mining inspection offices, for the maintenance, camouflage, bomb protection, dispersal, removal and emergency repairs for installations and materials necessary for the air defense of mines designated by the Munitions Minister as stipulated in Paragraph 1, Section 4, Article 16.

2. By the chiefs of the communications bureaus for the maintenance, camouflage, bomb protection, dispersal, removal and emergency repairs for installations and materials necessary for the air defense of electric communications installations.

3. By the prefectural governors (excluding those appearing in Subparagraph 4 below) and the chiefs of the sea transport bureaus, for the air defense of anchored shipping; and by the chiefs of the sea transport bureaus for other shipping.

4. By the chiefs of the sea transport bureaus, for the maintenance, camouflage, bomb protection, dispersal, removal, and emergency repairs for installations and materials (excluding those

for fire prevention and fire fighting in harbors) necessary for the air defense of shipping, or harbors which are designated by the Minister of Transportation and Communication as stipulated in Paragraph 1, Section 4, Article 16.

5. By the chiefs of the railroad bureaus, for the maintenance, camouflage, bomb protection, dispersal, removal, or emergency repairs for installations or materials necessary for the air defense of railways.

6. By the prefectural governors or the chiefs of the railroad bureaus, for the maintenance, camouflage, bomb protection, dispersal, removal, or emergency repairs for installations or materials necessary for the air defense of roadbeds.

7. By the prefectural governors, chiefs of the sea transport bureaus, or chiefs of the railroad bureaus, for emergency transport.

Section 8 of Article 16. The functions of government offices designated in Paragraph 2, Article 3, Air-Defense Law, and Article 15 and Section 3 of Article 16 (See Translator's Note) of this Act, will be performed by the prefectural governors. However, matters listed in the previous article and fixed by the various numbered paragraphs, will be handled by the following: by the jurisdictional minister as designated by the numbered paragraphs for matters stipulated in Subparagraph 1, Paragraph 1, Section 4, Article 16 pertaining to factories or businesses (excluding mines); by the Minister of Transportation and Communication for matters stipulated in Subparagraph 3 of the same pertaining to aeronautical businesses or installations.

(Translator's Note.—The annexed model of the affidavit referred to in Article 8, this Act, has been omitted in this translation. The affidavit constitutes a limited search warrant. On one side its number, issuing date, issuing authority, and bearer's name appear; on the other, the Articles from the Air-Defense Law and the Air-Defense Law Enabling Act authorizing its use are reprinted in full.)

The functions of government offices stipulated in Section 5, Article 8, Air-Defense Law, will be performed by prefectural governors. However, transportation or communication functions which depend on a renewal or continuation of orders for activity will be performed by the Minister of Transportation and Communication when related to air or sea transport, by the chiefs of the communications bureaus when related to communications, and by the chiefs of the railroad bureaus when related to railways, roadbeds, or small transport.

The functions of government offices stipulated in Paragraph 1, Article 11, Air-Defense Law, will be performed by the Ministers of Home Affairs, of the Army, of the Navy, of Education, of Welfare, of Agriculture and Commerce, of Transportation and Communications, and the Munitions Minister and by prefectural governors, and the chiefs of the mining inspection offices, of the communications bureaus, of the sea transport bureaus, and of the railroad bureaus.

Section 9 of Article 16. When in reference to the Tokyo Metropolitan District, the term prefectural governor indicates the Tokyo Metropolitan governor in Sections 2 through 4 of Article 5, Section 6 of Article 5, Section 4 of Article 8, and Section 2 of Article 12, all of the Air-Defense Law, and in Sections 5 through 8 of Article 3, Section 11 of Article 3, and Article 11, all of this act; but the term indicates the Chief of the Metropolitan Police in Section 2 of Article 8, and Paragraph 2 of Article 8, both of the Air-Defense Law.

Article 17. In the application of this Act the persons who manage concurrently the business of the town or village halls and the business of town or village associations (TN: When the latter exist), these association supervisors, will be considered mayors of individual towns or villages.

EXHIBIT C–3

Translation of Imperial Ordinance No. 806 Creating the National Air-Defense General Headquarters (Boku Sohombu)

[Promulgated 1 November 1943]

Article I. The Supreme (Civilian) Air-Defense Headquarters shall be under the supervision of the Minister of Home Affairs, and it shall handle the following affairs:

1. Affairs related to civilian air defense.

2. Matters related to the adjustment and unification of the civilian air-defense affairs of the various government offices.

Article II. The following staff shall be appointed to the Supreme Air-Defense Headquarters:

1. A chief and a deputy chief.

2. Directors of bureaus: four (4) persons, *chokunin rank.*

3. Secretaries: nine (9) persons, full time, *sonin rank.*

4. Administrative officials: twenty-one (21) persons, full time, *sonin rank*.

5. Commissioners: thirteen (13) persons, full time, *sonin rank*.

6. Technical experts: thirty-two (32) persons, full time, *sonin rank* (two (2) persons out of these appointments may be of *chokunin rank*).

7. Subordinate officials: seventy-nine (79) persons, full time, *hannin rank*.

8. Assistant technical experts: sixty-five (65) persons, full time, *hannin rank*.

The chief of the police bureau of the Department of Home Affairs shall assume the position of the chief of the police bureau in addition to his other duties; the chief of the public works bureau shall assume the position of the chief of the engineering bureau, in addition to his other duties.

Article III. In addition to the staff specified in the preceding article, the cabinet may appoint administrative official(s) from amongst high officials of the related and respective government offices, upon the recommendation of the Minister of Home Affairs.

Article IV. Four (4) bureaus shall be established in the Supreme Air-Defense Headquarters as follows:

1. The General Affairs Bureau.
2. The Police Bureau.
3. The Engineering Bureau.
4. The Service Bureau.

Assignments of the particular work of each bureau shall be decided by the Minister of Home Affairs.

Article V. 1. The councillors shall be appointed to the Supreme Air-Defense Headquarters to participate in the headquarters' affairs.

2. The councillors shall be appointed by the cabinet from imperially-appointed officials of the related and respective government offices, upon the recommendation of the Minister of Home Affairs.

Article VI. 1. The technical experts shall be appointed to the Supreme Air-Defense Headquarters to investigate technical matters related to air defense.

2. The technical expert(s) shall be appointed by the cabinet from persons who are possessed of scholarly attainments and/or experience.

3. The terms of office of technical expert(s) shall be two (2) years; however, under special circumstances, they may be released during their terms of office.

Article VII. The Minister of Home Affairs shall assume the position of the Chief. He shall supervise the affairs of the Supreme Headquarters, preside over the staff under his jurisdiction, and possess the power of appointing and discharging the staff whose ranks are *hannin* or below.

Article VIII. The Vice-Minister of Home Affairs shall assume the position of the Deputy Chief. He shall assist the Chief, and manage the affairs of the Supreme Headquarters.

Article IX. The directors of the bureaus shall receive their orders from their superior officers, and manage the affairs of the bureaus.

Article X. The secretaries, the administrative officials, and commissioners shall receive their orders from their superior officers, and handle their affairs.

Article XI. The technical experts shall receive their orders from their superior officers, and handle the technical matters.

Article XII. The subordinate officials shall be directed by their superior officers, and attend to various affairs.

Article XIII. The assistant technical experts shall be directed by their superior officers, and attend to technical matters.

Article XIV. 1. An air-defense laboratory shall be established in the Supreme Air-Defense Headquarters; it shall handle the affairs relating to air defense.

2. A director shall be appointed to the air-defense laboratory, and this position shall be filled by a technical expert.

Article XV. 1. An air-defense training school shall be established in the Supreme Air-Defense Headquarters; and it shall handle the training which is related to civilian air defense.

2. A director shall be appointed to the air-defense training school; and this position shall be filled by a secretary.

Supplementary Provisions

1. The present law shall come into force on and after the day of promulgation.

2. At the time this law comes into force, if and when the written official appointments are not issued to those persons who are at present on the staff of the Ministry of Home Affairs and affiliated with either the bureau of civilian air defense or the air-defense laboratory, they are considered appointed with the same ranks and salaries as follows:

a. The secretaries of the Department of Home

Affairs are appointed as the secretaries of the Supreme Air-Defense Headquarters.

b. The administrative officials of the Department of Home Affairs are appointed as the administrative officials of the Supreme Air-Defense Headquarters.

c. The commissioners of the Department of Home Affairs are appointed as the Commissioners of the Supreme Air-Defense Headquarters.

d. The technical experts of the Department of Home Affairs are appointed as the technical experts of the Supreme Air-Defense Headquarters.

e. The subordinate officials of the Department of Home Affairs are appointed as the subordinate official of the Supreme Air-Defense Headquarters.

f. The assistant technical experts of the Department of Home Affairs are appointed as the assistant technical experts of the Supreme-Air Defense Headquarters.

3. At the time this law comes into force, those persons (only those who were affiliated with either the bureau of air defense or the air-defense laboratory, at the time they were suspended from their offices) who are at present on the staff but are suspended from office, are considered, as shown in the examples set forth in the preceding paragraph, to be appointed to the staff of the Supreme Air-Defense Headquarters with the same official ranks and salaries as when they were suspended, unless they are notified otherwise with written official notices.

EXHIBIT C–4

Translation of Imperial Ordinance No. 836 Creating the Air-Defense Headquarters of Tokyo Metropolitan District

[Promulgated on 1 November 1943]

Article I. The Air-Defense Headquarters of Tokyo-to shall handle the adjustment and unification of the affairs relating to air defense that come under the jurisdiction of Tokyo-to and of the Metropolitan Police Board.

Article II. The following staff shall be appointed to the Air-Defense Headquarters of Tokyo-to:

1. A chief
2. Two (2) deputy chiefs
3. Members of the headquarters
4. Administrative officials
5. Clerks

Article III. 1. The Governor of Tokyo-to shall assume the position of the Chief; and the Chief of the Metropolitan Police Board and the Lieutenant-Governor of Tokyo-to shall assume the positions of the Deputy Chiefs.

2. The following Tokyo-to and Metropolitan Police Board officials shall be the members of the headquarters:

a. Tokyo-to officials; the director of the civil administration bureau; the director of the economics bureau; the director of the planning bureau; the director of the defense bureau; the director of the transportation bureau; the director of the bureau of water works; and the director of the bureau of harbors.

b. Metropolitan Police Board officials: the chief secretary of the Metropolitan Police Board; the chief of the police affairs department; the chief of the peace section; the chief of the prefectural police; and the chief of fire service.

3. The administrative officials shall be appointed by the cabinet from amongst the administrative officials of Tokyo-to and the police superintendents of the Metropolitan Police Board upon the recommendation of the Minister of Home Affairs.

4. The clerks shall be appointed by the Minister of Home Affairs from amongst subordinate officials of Tokyo-to and the police inspectors of the Metropolitan Police Board.

Article IV. The chief of the Air-Defense Headquarters shall be directed and supervised by the Minister of Home Affairs; he shall supervise the affairs of the headquarters, and when there is necessity for the adjustment and unification of affairs relating to air defense that come under the jurisdiction of Tokyo-to or the Metropolitan Police Board, he shall make suggestions to the Governor of Tokyo-to or the chief of the Metropolitan Police Board.

Article V. 1. The deputy chiefs shall assist the chief and manage the affairs of the headquarters.

2. The members of the headquarters shall receive their orders from their superior officers and handle the affairs of the headquarters.

3. The administrative officials shall receive their orders from their superior officers and handle the affairs of the headquarters.

4. The clerks shall be directed by their superior officers and they shall be engaged in the general affairs.

Supplementary Provision

The present law shall come into force on and

after the day of promulgation. (1 November 1943).

NOTE.—Two anomalies are incorporated in this law: (a) The law states that the chief of the Air-Defense Headquarters shall make suggestions to the Governor of Tokyo Metropolitan District and at the same time provides that these two offices shall be held by the same person: (b) although the chief of the Metropolitan Police Board is made Deputy Chief of the Air-Defense Headquarters under the Governor of the Metropolitan District (Article III, Paragraph 1), the Governor (as Chief of Air-Defense Headquarters) is required to make "suggestions" to the Chief of the Police Board (Article IV). In reality the Metropolitan Police Board did not recognize the authority of the Tokyo Air-Defense Headquarters.

EXHIBIT C–5

Translations of Proclamations of the Governor of Tokyo Metropolitan District at the time of the first mass raid

TOKYO-TO OFFICIAL NOTICE
March 10, 1945

In order to be unassailable, we are attempting everything within our power to relieve the victims of the current air raids.

We are calling upon the people of the capital to pledge themselves to be unafraid of the air raids, to strengthen their accord and unity with one another, and to steel themselves all the more to fulfill the great task of guarding the imperial capital and also fully to cooperate and lend support to the unfortunate sufferers with warm feelings of loving comradeship.

Governor of Tokyo-To, Yoshizo Nishio
Chief of Metropolitan Police, Shinya Saka

TOKYO-TO PUBLIC NOTICE, No. 133
March 10, 1945

Regardless of detailed regulations relative to the application of the Tram Fare Regulations of Tokyo-to and the special wartime regulations under detailed regulations relative to the application of the Bus Fare Regulations of Tokyo-to, from March 10 to March 14, 1945, no fares shall be collected on municipal trams and buses from the victims of the current air raid.

Governor of Tokyo-To, Yoshizo Nishio

(The above two items, dated March 10, were published in the extra editions of Tokyo newspapers)

TOKYO-TO OFFICIAL NOTICE
March 13, 1945

It is indeed fearful to have such great damage inflicted in the imperial capital as by the recent air raids. We are fully in sympathy with the unfortunate sufferers in the capital. We can hardly suppress our common indignation against the savage action of the enemy which had no regard for humanity. It is our fervent wish that the victims shall not succumb to this pain and shall resolve to be ever more vigorous in destroying the enemy and that the people, other than those who must remain in the capital because of their responsibilities, shall leave for the rural areas, whether they have relatives or not, to engage fullheartedly in the defense of our production of munitions. Those who are to remain in the capital shall renew their indignation and shall volunteer, with readiness to defend the capital to the last man, in the defense of the capital and in strengthening military might.

We are calling upon the people of the capital whether they are remaining in the capital or leaving for the rural areas that they shall fulfill the great duty of protecting and sustaining the imperial nation by all joining in the fighting line to concentrate every bit of fighting power on the destruction of the invasion of the ugly enemy.

Governor of Tokyo-to, Yoshizo Nishio

(The above notice, dated May 13, was published in the extra editions of Tokyo newspapers)

EXHIBIT D

Reports on Great Air Raids (Tokyo) as taken from the Archives Section of the Ministry of Home Affairs

AN EXAMPLE OF A GREAT AIR RAID (TOKYO)

As reported by the Archives Section of the Ministry of Home Affairs

FIRST RAID

From: March 9th, 1945 (20th year of the Showa).

To: March 10th, 1945 (20th year of the Showa).

1. a. Dispatch of warning signal (3/9, 10:30 P.M.).

b. Dispatch of air-raid signal (3/10, 12:15 A.M.).

c. Air raid (3/10, 12:08 A.M.).

d. Cancellation of air-raid signal (3/10, 2:37 A.M.).

e. Cancellation of warning signal (3/10, 3:20 A.M.).

2. *The number of attacking planes*: 150 Boeing B-29's.

3. *Attacking method*: Soon after the warning signal was ordered, several B-29's raided the capital. However, no damage was caused. It looked as though they were escaping toward the south of the Boso Peninsula, but suddenly, one plane that was coming to raid from the east side of the capital quickly dropped incendiary bombs in the Joto area. Afterwards, in formation of one or several planes, they continued the saturation bombing repeatedly at low-level.

4. *Aerial bombs* (Types of bombs used):

a. Bombs, 100-Kg.	6
b. Incendiary bombs, petroleum jelly, 45-lb. type	8,545
c. Incendiary bombs, 2.8-Kg. type	180,305
electron, 1.7-Kg.	740

5. *The weather conditions*:

Weather	clear
Direction of the wind	north
Wind velocity	violent
Humidity	50%
Tide	low-tide

6. *The area destroyed by fire*: a. Most parts of Shitaya-ku, Asakusa-ku, Fukagawa-ku, Honjo-ku, Joto-ku.

b. A half of Ashidate-ku, Kanda-ku, Kojimachi-ku, Nihombashi-ku, Hongo-ku, Shiba-ku, and Arakawa-ku.

c. A part of Ushigome-ku, Mukojima-ku, Hongo-ku, Koishikawa-ku, Kyobashi-ku, Azabu-ku, Akasaka-ku, Katsushika-ku, Takinokawa-ku, Setagaya-ku, Toshima-ku, Shibuya-ku, Itabashi-ku, and Edogawa-ku.

d. Main building of the Imperial News within the Department of the Imperial Household.

e. Water craft:

Yawls	300
Barges	152
Small boats	23

7. *The extent of fire damage*:

182,066 houses housing 372,108 families.

4,000,504 tsubo (one tsubo—3.95 sq. yds.) of land.

8. *The origin of fire and extent of fire damage*: The enemy broke up into formations of single planes and of several planes, and continued the saturation bombing for about 2 hours and a half at low-level, causing many fires in the previously mentioned wards. Just then a gale was blowing at the speed of 13 metres per second, and in no time scattered fires came together into a single huge flame and 40 percent of the capital was burned to the ground. During this period casualties increased continuously. As a result, a great tragic scene was revealed, where victims were surprisingly many; 72,000 civilians were dead, and wounded civilians amounted to 21,000, resulting in the greatest damage suffered yet.

9. *The activities of the Government-established fire fighters (Kansetsu-Shobotai)*: Immediately upon the outbreak of the air-raid fires, the government-established fire fighters supervised the following squads, but in spite of their great effort to fight the flames they were beyond their control: 96 fire engines, 150 hand-drawn gasoline pumps, and 1000 water hoses were lost; 85 were dead from the fires, 40 missing, and the casualties of the auxiliary police and fire units amounted to more than 500.

Among the recent air raids it was their most trying effort.

Damaged wards	No. of fire-engines that participated	No. of hand-drawn gasoline pumps that participated	No. of members of government established fire-fighting units (Kansetsu-Shobotai)	No. of members of the auxiliary police and fire units (Keibodan)
Shitaya:				
Ward engines	22	43	476	901
Reinforcing engines	45			
Adachi	17	1	126	7
Kanda	19	5	140	35
Imperial squads within the Dept. of the Imp. Household (special fire fighters)	1	4	14	28
Fukugawa:				
Ward engines	21	65	301	455
Reinforcing engines	21			
Joto	31	54	224	378
Honjo	25	6	182	42
Marunouchi area	18	9	133	63
Asakusa:				
Ward engines	16	21	133	372
Reinforcing engines	2			
Mukojima	30	48	217	602
Kojimachi:				
Ward engines	22	22	287	154
Reinforcing engines	18			
Nipponbashi:				
Ward engines	20	26	336	182
Reinforcing engines	27			
Hongo:				
Ward engines	17	50	602	350
Reinforcing engines	67			
Shiba:				
Ward engines	18	6	553	42
Reinforcing engines	60			
Koishikawa	12	2	42	7
Kyobashi:				
Ward engines	35	30	427	210
Reinforcing engines	25			
Azabu	15	8	112	56
Akasaka	8	6	63	42

Damaged wards	No. of fire-engines that participated	No. of hand-drawn gasoline pumps that participated	No. of members of government established fire-fighting units (Kansetsu Shobotai)	No. of members of the auxiliary police and fire units (Keibodan)
Arakawa:				
Ward engines	38	30	630	210
Reinforcing engines	51			
Katsushika	9	4	70	28
Takinokawa	10		77	
Setagaya	15	2	112	14
Toshima:				
Ward engines	21	6	322	42
Reinforcing engines				
Marine section (fire boats) and waterfront	8	15	63	105
Takanawa:				
Ward engines	9	6	133	42
Reinforcing engines	9			
Shibuya	3	5	28	35
Itabashi	4	1	35	7
Edogawa:				
Ward engines	26			
Reinforcing engines	4	63	217	573
Total	843	538	6,055	4,982

REMARKS:

1. The above chart lists the squads that went to the actual scenes but does not include the guards who stayed behind and also off-duty guards who assembled at the scenes.

2. The entries of the above chart show the participation of the fire-brigade stations that were in charge of their respective damaged areas.

RELIEF

I. THE EVACUATION AND THE SAFEGUARDING OF THE VICTIMS

1. *The rescue of the stricken victims.* On March 10th at 3:00 A.M., the battalion commanders of the national guards and the chiefs of the police were instructed to take secure measures to encourage evacuation and to give assistance to the victims.

They accommodated 1,150,000 persons, who became victims simultaneously in 383 places outside of the damaged areas, such as national schools (elementary schools), temples, buildings not used, etc., also in private homes, and gave them emergency aid.

2. *The accommodation of victims in the homes of their relatives in the city.* Victims who had relatives in the city or in neighboring prefectures were accommodated temporarily in their respective relative's homes.

3. *Food distribution.* As for the first food distribution to over thirty or more places that were severely damaged, first of all, we supplied dry bread to help the victims.

At the police stations that were undamaged, emergency kitchens were established and riceballs were provided for the stricken victims. We did our best to provide an unfailing supply of food to the striken victims.

4. *The distribution of bedding, charcoal, and other supplies.* As for the bedding for stricken victims, city-owned blankets and quilts were provided. Furthermore, from the army's food and clothing department, we borrowed blankets and distributed them to the victims. Charcoal, cigarettes, toilet paper, etc., were distributed from the ward offices.

5. *Encouragement of refugee evacuation into the country.* The police, the auxiliary police and fire units (Keibodan) and the district radio squads were dispatched to the main rail stations in the city. With the aid of station employees, they assisted in removing the refugees to the country.

Furthermore, refugee information booths were established in the city of Tokyo, rescue squads were dispatched and they are now giving advice and first-aid treatment to the sick and wounded.

6. *Transportation for those who were unable to walk.* With the cooperation of the Tokyo Automobile Transportation Association (Tokyo-to Ryokyaku-jidosha Unso-jidosha Kumiai) we transported the sick and wounded and those others who were having difficulty in walking.

II. AID TO THE SICK AND THE WOUNDED

The figures of the sick and the wounded are not definite, but there was quite a large number of them. Due to the many casualties among the rescuers in the stricken area, rescue work was made difficult, so with the cooperation of the city of Tokyo, aid facilities were acquired from the undamaged areas and were dispatched to the first-aid stations. By obtaining the active cooperation of the aid facilities, police, auxiliary police and fire units, army rescue squads of the neighboring prefectures and the Japan Red Cross mobile units, we were able to complete the emergency rescue measures at the actual scenes and at the temporary relief stations for the victims by the afternoon of the 12th. Furthermore, those people who were seriously wounded and were taking first-aid treatments at refuges for the victims (such as schools) were transferred by ambulances and by first-aid cars to well-equipped emergency hospitals. Hereafter medical treatment for the serious cases was given by each aid facility.

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III. Disposal of the Dead

The dead were handled mainly by the police and the auxiliary police and fire units with the aid of the army. The dead were taken temporarily to schools, parks, temples, and vacant lots, by trucks, carts, and stretchers. The task was mostly completed on March 15th.

The number of dead removed amounted to 72,000 or more; still more were expected to be found in the rivers and in the places of refuge.

The dead were transferred to, and disposed of, at established crematories, but where there were many casualties we conducted a temporary outside cremation for part of them. Due to the fact that we did not have the equipment for mass cremation, we adopted as an emergency measure temporary burial in parks and cemeteries.

IV. The Causes for Extensive Damage

The velocity of the wind was strong. Simultaneous incendiary attacks caused many fires in wide areas. Therefore, there was no chance for the neighborhood associations to function. Also other various organizations such as the metropolitan fire department, police officers, auxiliary police and fire units, and other air-defense organizations could not demonstrate their full capacity.

Second Raid

From: April 13, 1945

To: April 14, 1945

1. a. The dispatch of warning signals, 10:44 P.M.

b. The dispatch of air-raid signals, 11:00 P.M.

c. Air raid, 11:18 P.M.

d. All-clear signals (following), 2:22 A.M.

e. Cancellation of warning signals (following), 2:52 A.M.

2. *The number of attacking planes*: 150 B-29's.

3. *The method of attack*: Mostly from Boso Peninsula and partly from the southern part of Izu Peninsula, they raided the capital with numerous formations with about 10 planes to each formation. They continued their bombing attack, wave after wave, for about three and a half hours with explosive bombs at an altitude of 3,000 to 5,000 meters.

4. *Aerial bombs*:

Explosive bombs:	250-Kg. type	75 bombs
	150-Kg. type	130 bombs
Incendiary bombs:	large type 45 lbs.	6,472 bombs
	small type 2.8-Kg.	65,238 bombs
	small type (electron)	18,050 bombs

5. *Weather conditions*:

Weather	clear
Wind direction	south
Wind velocity	low

6. *Area destroyed by fire*:

a. The larger part of Fukagawa, Joto and Mukojima wards.

b. The larger part of Hongo, Ushigome and Arakawa wards.

c. Half of Edogawa and Adachi wards.

d. The larger part of Toshima and Yodobashi wards.

e. The larger part of Nakano, Itabashi and Oji wards.

f. A part of Shitaya, Katsushika, Nihombashi and Suginami wards.

g. The larger part of Koishikawa, Yotsuya, Kojimachi, Takinokawa, Akasaka, Shibuya, and Asakusa wards.

As shown above, the damaged area is almost the whole city of Tokyo.

7. *The extent of destruction by fire*:

Buildings	105,914
Dwelling units	173,408
Tsubo (1 tsubo—3.95 sq. yds.)	2,507,020

8. *The origin of fire and the extent of fire damage*: This air raid had for its main purpose destruction by fire. With this attack it appeared that military installations and production facilities were to be destroyed by fire. The enemy carried out a very thorough saturation bombing and the results of this continuous bombing with explosive bombs (large and small), petroleum jelly bombs, and electron bombs (large and small) etc., caused the people to lose their fighting spirit completely, so that they were not able to defend themselves against the aerial attack. The fire and bombing extended to the whole area and the wind velocity gradually increased. The area became a flow of fire spreading over a wide area.

This raid lasted for hours and burned the greater part of the capital.

9. *The activities of Government-established fire squads (Kansetsu-Shobotai)*: With this outbreak of fire the government-established fire squads exerted their full efforts in fighting the fire and also in obtaining the aid of approximately 100 fire engines from the following prefectures: Chiba, Kanagawa, Gunma, Saitama, Ibaragi, and

Damaged wards	No. of fire-engines that participated	No. of hand-drawn gasoline pumps that participated	No. of members of government established fire-fighting units (Kansetsu-Shobotai)	No. of members of the auxiliary police and fire units (Keibodan)
Hongo:				
Ward engines	19	60	672	420
Reinforcement engines	76			
Ushigome	18	29	133	203
Arakawa:				
Ward engines	38	21	399	147
Reinforcement engines	18			
Edogawa:				
Ward engines	33			
Reinforcement engines	9	22	301	154
Adachi:				
Ward engines	23	7	329	49
Reinforcement engines	23			
Toshima:				
Ward engines	23	63	413	441
Reinforcement engines	35			
Yodobashi:				
Ward engines	22	50	791	350
Reinforcement engines	90			
Shitaya:				
Ward engines	20			
Reinforcement engines	17	5	304	195
Koishikawa:				
Ward engines	19			
Reinforcement engines	32	19	364	133
Nakano	13	7	98	49
Katsushika	11	3	91	21
Mukojima	15	10	112	145
Kojimachi (Marunouchi region)	20	1	147	7
Special fire fighting squad of each ward	15	7	112	49
Kanda	17		161	
Reinforcement engines	5			
Itabashi:				
Ward engines	28	16	231	112
Reinforcement engines	4			
Nihombashi		1	0	7
Oji	27	35	196	245
Yotsuya				
Ward engines	15	12	182	84
Reinforcement engines	10			
Kojimachi (except Marunouchi):				
Ward engines	25	21	266	147
Reinforcement engines	12			
Takinokawa	15	5	112	35
Joto	2		21	
Akasaka	7	2	56	14
Asakusa	3	2	28	(1)
Suginami	16	21	119	(1)
Fukagawa	4		35	
Shibuya:				
Ward engines	17	8	280	56
Reinforcement engines	22			
Total	818	427	5,953	3,063

Tochigi. Their activities were as follows:

10. *The extent of air-raid damage*: The extent of this air raid is the same as the daylight air raid of March the 10th, and the city received a saturation bombing.

The casualties were rather few, but the extent of damage was the same as on the previous raid of March the 10th. A wide area was burned and the scene was horrible.

11. *The cause of extensive fire*: a. Under the conditions of the bombing which was repeated and concentrated, there was, on the whole, hardly any chance for neighborhood associations (Tonari Gumi) to function, and on top of that the functioning of the government-established (Kansetsu) fire-fighting system, police, auxiliary police and fire units, and other air-defense systems was blocked by the force of the fire and they were not able to demonstrate their full capacity.

b. Due to the interruption of communications at the time the fire started, wireless communications were replaced by emergency services such as motorcycle and bicycle messengers and, therefore, information about the extent of fire damage was inadequate and caused difficulty in the movement of fire-fighting groups.

c. The consequences of the previous air raid had caused the people to evacuate from the area and in certain sections they had neglected to keep the water tanks filled, lacked the preparation for air defense, and also from the beginning the people devoted themselves to carrying out their household goods and lacked a fighting spirit toward the incendiary bombing.

d. By reason of the air raid of April 2nd, water pressure became very low and it was useless for fire-fighting.

12. *The rescue of air-raid victims*: The victims who were able to seek refuge at homes of relatives within the city and neighboring prefectures, by foot or by streetcars, were made to take temporary residence in such places and those people with no relatives or those who had difficulty in seeking refuge due to long distance were temporarily housed at private homes, schools, temples and other places in the surviving areas.

The emergency rescuing was done by providing the victims with bread and riceballs. Food, bed-

[1] Unknown.

REMARKS:

1. The above chart lists the squads that went to the actual scenes, but does not include the guards who stayed behind and also off-duty guards who assembled at the scene.

2. The above chart shows the participation of fire-brigade stations that were in charge of their respective damaged zones

ding and charcoal were also distributed. The emergency supply of food was freely given out as follows: rice for 5 days, bean paste (miso), and soy-sauce (shoyu). In regard to dealing with passengers out of the city the procedure was made especially simple and other conveniences were given enabling them to take refuge in the country.

13. *The rescue of casualties*: The casualties were remarkably few: killed 126 and wounded 109.

Due to the few casualties the rescue work and management were performed very smoothly in each district.

THIRD RAID

Date: May 24th, 20th year of Showa (1945)

1. *Warning signals*: a. Dispatch of warning signal, 1:05 A.M.

b. Dispatch of air-raid signal, 1:36 A.M.

c. Air raid, 1:36 A.M.

d. All-clear signal, 3:50 A.M.

e. Cancellation of warning signal, 3:55 A.M.

2. *The number of attacking planes*: Approximately 250 B-29's.

3. *Attacking method*: The bombing started about 1:50 A.M. The planes broke through over the west side of the capital and, by single planes at a time, saturation incendiary bombing was carried out from above the clouds. This attack was carried out in various ways in the most skillful manner. There were about 11 B-29's shot down over the capital, as observed from the ground.

4. *Aerial bombs*:

Type (incendiary)	Size Kg.	Number
a. Petroleum jelly	45	7,866
b. Petroleum jelly	2.8	92,170
c. Electron	1.7	2,000
d. Yellow phosphorus	100	15,000
e. Bombs (not incendiary)	100	2,000

5. *Weather condition*:

Weather	clear
Direction of wind	northwest
Wind velocity	gale
Humidity	70%
Tide	full tide

6. *Area destroyed by fire*:

a. Large area of Meguro, Omori, Kamada, Ebara, Shibuya, and Shiba wards.

b. The remaining parts of the following wards were destroyed: Akasaka, Suginami, Setagaya, Hongo, Kyobashi, Yotsuya, Toshima, Itabashi, Edogawa, Nakano, Kojimachi.

c. Within the palace grounds: Chushunkaku, Togu karigosho, and Royal guard detached post.

7. *Extent of fire damage*:

Number of houses	41,631
Number of dwellings	49,159
Area by tsubo (one tsubo-3.95 sq. yds.)	700,015

8. *The causes of fire and extent of fire damage*: Approximately 250 B-29's in formations entered from the direction of Suruga and Sagami Bays and raided the capital in open formations (single planes in lines), mostly from the southwest, dropping incendiary and other types of bombs. Many fires were started in a wide area by the explosion of numerous incendiary bombs in the wards previously mentioned (or listed as damaged). At the same time a gale started and in no time the flames joined together in a stream of flame. The raiding planes continuously carried out the attacks, wave after wave, for two consecutive hours, therefore the fire fighters and the aerial defense corps were not able to extinguish the fires as they expected. It caused great damage in a large area and inflicted great numbers of casualties.

9. *The functioning of the government-established fire squads*: Simultaneously with this sudden outbreak of air-raid fire the government-established fire squads (as listed in chart) fought the fire bravely and with full effort, but due to the lack of equipment and damage to the water-pipes, the water pressure became very low and fire fighting difficulties mounted.

However, as a result of the full and tireless effort of the commander and his men to prevent the flames from spreading, the fire was checked after three and a half hours, although, in fighting against this fire, much equipment was destroyed and numerous casualties resulted among our fire squads, auxiliary police and fire units, etc.

Damaged wards	No. of fire-engines that participated	No. of hand-drawn gasoline pumps that participated	No. of members of government-established fire-fighting units (Kansetsu-Shobotai)	No. of members of the auxiliary police and fire units (Keibodan)
Meguro:				
Ward engines	20	7	154	49
Reinforcement engines	1			
Omori, Ward engines	20	30	301	210
Kamada (within Yaguchi station district)	13	1	98	7

Damaged wards	No. of fire-engines that participated	No. of hand-drawn gasoline pumps that participated	No. of members of government established fire-fighting units (Kansetsu-Shobotai)	No. of members of the auxiliary police and fire units (Keibodan)
Kamada, Ward engines (Kamada fire dept. district),	13		133	
Reinforcement engines	5			
Ebara:				
Ward engines	22			
Reinforcement engines	7	7	210	49
Akasaka:				
Ward engines	19	7	175	49
Reinforcement engines	5			
Shibuya	33	55	238	385
Kyobashi:				
Ward engines	25	8	217	56
Reinforcement engines	5			
Shiba (within Takawa Fire dept. district)	17	3	126	21
Setagaya:				
Ward engines	19			
Reinforcement engines	5	8	175	56
Shiba (within dist. of Shiba fire dept.):				
Ward engines	19	30	224	210
Reinforcement engines	5			
Itabashi	8		63	
Suginami	22	10	161	70
Hongo:				
Ward engines	19	40	497	280
Reinforcement engines	51			
Yotsuya:				
Ward engines	9	20	203	140
Reinforcement engines	19			
Kojimachi (within dist. of Kojimachi fire dept.)				
Ward engines	26	6	217	42
Reinforcement engines	4			
Toshima	12	3	91	21
Edogawa	5	4	42	28
Togu gosho (detached post of Royal Guard Palace ground)	4	3	35	21
Nakano		1		7
Total	432	243	3,360	1,701

REMARKS

a. The above list is only the record of those present at the scene of fire-fighting and does not include the guards remaining behind or the off-duty members who assembled at the scene.

b. The records listed above were based on a survey by the fire stations in charge of the damaged wards.

10. *The functioning of the principal aerial defense organizations*: The principal aerial defense organizations such as the police, fire squads, etc., commanded and cooperated with the auxiliary police and fire units, neighborhood groups, etc., to work on various guard duties, mainly to fight the initial stages of fire, do rescue work, and to care for afflicted people. Especially due to the fact that the fire covered a vast area of damaged wards, the aid of national guard units, police forces and fire departments of undamaged wards and mechanical equipment was asked for in an effort to minimize the damage. The spirit of the general public was high and they always attempted bravely to halt the fire in its early stages and to prevent its spreading.

11. *The causes of widespread damages*: a. Long and repeated attacks by large numbers of planes.

b. Due to strong wind-velocity, the force of the flames was very intense.

c. Large areas were attacked (raided).

d. The damage done to the water mains caused the water pressure to be very low and to become useless.

12. *Rescue work for the afflicted people*: a. The afflicted people of each damaged area were accommodated in the remaining undamaged school buildings, temples, city hall, neighborhood association buildings, and so forth. In each area the volunteer supply task squads were mobilized and emergency kitchens were established in order to supply the people with meals, dried bread, riceballs, etc. Those who had relatives within the capital or in neighboring prefectures were gradually evacuated to their relatives.

b. In coordination with the Tokyo Metropolitan Economic Department, dried bread and the following items: powdered milk, green vegetables, preserved foods, milk (for infants), bread, blankets, matches, candles, chinaware, chopsticks, toilet papers, towels, etc., were distributed.

13. *The rescue work and the handling of casualties*:

	Persons
Dead	228
Missing	3
Wounded	2,164

The dead were cremated and those severely wounded were hospitalized in the remaining hospitals. Emergency treatments were given to people with light wounds.

11. *Condition of the general public*: Unlike previous air raids, the people were not panicky to escape the raid and the general public, as a whole, was very calm. There were no signs of serious violations of law and order and the people were slowly returning to normality.

X. GLOSSARY

ENGLISH—JAPANESE

A

Accounting Department	Keiribu
Acres (2½)	Chobu
Air-defense first-aid unit	Boei Kyugotai
Air-Defense General Headquarters	Boku Sohombu
Air-Defense Law	Boku Ho
Air-defense observation unit	Boku Kanshitai
Air intelligence battalion	Koku Johotai
Air-raid alarm	Kushu Keiho
Air-raid protection training	Boku Kunren
Air-raid shelter	Hinanjo (Kushu Taihi Sho)
Air-raid warden	Kushu Keiho Gakari
Air-raid-warning system	Kushu Keiho Soshiki
Anti-aircraft guns	Kosha Ho
Auxiliary police and fire units	Keibodan

B

Bacteria bombs	Saikindan
Battalion districts (fire)	Kankatsu Kuiki
Block association	Chokai
Block association leader	Chokai Cho
Bombs	Bakudan
Blue Ribbon Distinguished Service Medal (Red Cross decoration)	Konjuhosho
Building defense section (of municipal government)	Kenchikuka
Building demolition section (of municipal government)	Tatemono Sokaika
Building utilization section (of municipal government)	Kenchikubutsu Riyoka
Business Bureau (of Air-Defense General Headquarters)	Eigyo Kyoku

C

Camouflage	Giso
Casualty station	Shuyo Jo
Chief of police	Keisatsu Shocho
Clothing, food and medical supply section (of business bureau, Air-Defense General Headquarters)	Ishoku Iyaku Zairyoka
Communications	Tsushin
Control center	Tosei Shubu

D

Damage assessment section (of police bureau, Air-Defense General Headquarters)	Chosaka
Decontamination	Bodoku
Defense headquarters	Boei Hombu
Defense section	Boeika
Defense Section (of the block association)	Bomubu

E

Eastern Sea Army	Tokaigun
Economic section (of the block association)	Shoshi Keizaibu
Emergency medical arm (of auxiliary police and fire unit)	Bogobu
Emergency medical service	Kyukyu Teate
Emergency welfare	Kyuo Kosei
Employment and finance section	Fukumuka
Engineer corps	Koheitai
Engineering bureau (of Air Defense General Headquarters)	Doboku Kyoku
Engineering works (of municipal government)	Koji Gakari
Evacuation (dispersal)	Sokai
Evacuation section	Sokaika

F

Factory air-raid protection	Kojo Boku
Factory fire brigade	Tokusetsu Bogodan Shobohan
Fireboat	Shobotei
Fire-breaks section (of Engineering Bureau, Air Defense General Headquarters)	Bokahekika
Fire chief	Shobo Shocho
Fire department chief	Shobobucho
Fire district	Chiku
Fire protection	Boka
First aid	Kyuo Teate
First-aid post	Okyu Teate Jo
Five-man group	Gonin Kumi

G

Gas mask	Bodoku Men
General affairs and budget section (of the block association)	Somu Kaikeibu
General affairs bureau (of Air-Defense General Headquarters)	Somu Kyoku
General affairs division (of municipal government)	Shomu Gakari
General affairs section (of general affairs bureau of Air-Defense General Headquarters)	Somuka
Great Japan Air-Defense Association	Dai Nippon Boku Kyokai
Guard arm (of auxiliary police and fire unit)	Keibobu

H

Hand pump	Te Oshi Pompu
Helmet	Kabuto
Higher civil official	Kotokan
Home guard	Jiei
Hose	Jakan

I

Incendiary bombs	Shoidan
Intelligence office	Joho Kyoku

K

Knight fire fighters	Buke Hikeshi

L

Labor unit	Roshitai
Ladder	Hashigo
Light control	Toka Kansei
Lighting	Toka
Local emergency first-aid squad	Chiku Oen Kyugo Hai

M

Material procurement and planning section (of general affairs bureau, Air-Defense General Headquarters)	Hokyu Keikakuka
Medical service	Chiryo
Messenger	Denrei Shi
Metropolitan District	To (Tokyo To)
Metropolitan Police Board (of Tokyo)	Keishicho
Ministry of Finance	Okura Sho
Ministry of Home Affairs	Naimu Sho
Ministry of Welfare	Kosei Sho
Mutual aid	Sogo Boku

N

Neighborhood group	Tonari Gumi
Northeastern Army	Tohokugun

O

Old name for Metropolitan Police Board	Bugyo Sho
Order of Merit (Red Cross decoration)	Yukosho
Ordinary civil official	Hanninkan

P

Parks and cemeteries section (of municipal government)	Koen Rokuchika
Personnel evacuation section (of municipal government)	Jinin Sokaika
Personnel section	Yoinka
Planning and public works bureau (of municipal government)	Keikaku Kyoku
Planning section (of municipal government)	Kikakuka
Poison gas	Doku Gasu
Police and fire section (of police bureau, Air-Defense General Headquarters)	Keisatsu Shoboka
Police bureau (of Air-Defense General Headquarters)	Keisatsu Kyoku
Prefectural governor	Chiho Chokan (Kenchiji)
Prefecture	Ken
Private properties section (of engineering bureau, Air-Defense General Headquarters)	Shiyu Zaisanka
Port security	Kowan Keibi
Protection against poison gas	Bodoku
Public properties section (of engineering bureau, Air-Defense General Headquarters)	Koyu Zaisanka
Pump	Pompu

R

Rationing	Haikyu
Reconstruction unit	Fukkyu Kosakutai
Region (political subdivision in homeland)	Chiho
Regional governor	So Toku Cho Kan
Rescue	Kyujo
Rescue section	Kyujoka
Reserves	Yobitai
Rope	Nawa

S

Savings section (of the block association)	Chochikubu
Shovel	Empi
Soldiers' assistance section (of the block association)	Gunji Engobu
Special defense corps	Tokubetsu Bogodan
Special fire arm (of auxiliary police and fire unit)	Tokubetsu Shobobu
Special guard unit (of auxiliary police and fire unit)	Tokubetsu Keibotai
Square yards (3.95) or 35.582 square feet	Tsubo
Strafing	Kuji Sosha
Students' patriotic unit	Gakko Hokokutai
Student volunteer firemen	Gakuto Tai
Sub-station (fire)	Shichojo
Summary Guide for Light Control	Toka Kansei Shido Yoryo

T

Taxation section (of the block association)	Nozeibu
Thought police	Shiso Keisatsu Kan
Training section (of general affairs bureau of Air-Defense General Headquarters)	Kunrenka

U

Unexploded bombs	Fuhatsudan

W

Ward	Ku
Wartime Damage Law	Senji Sanji Hogo Ho
War Death or Injury Insurance Law	Senso Shibo Shogai Hoken Ho
War Insurance Emergency Measures Law	Senso Hoken Rinji Sochi Ho
Water auxiliary police and fire unit	Suijo Keibodan
Water works construction unit	Suido Kosakutai
Welfare	Kosei
Women's section (of the block association)	Fujimbu

Y

Youth section (of the block association)	Seishonenbu

B

Bakudan	Bombs
Bodoku	Protection against poison gas
Bodoku Men	Gas mask
Boei Hombu	Defense headquarters
Boei Kyugotai	Air-defense first-aid unit
Boeika	Defense section
Bogobu	Emergency medical arm (of auxiliary police and fire unit)
Boka	Fire prevention
Boka	Fire protection
Bokahekika	Fire-breaks section (of engineering bureau, Air-Defense General Headquarters)
Boku Ho	Air-Defense Law
Boku Kanshitai	Air-defense observation unit
Boku Kunren	Air-raid protection training
Boku Sohombu	Air-Defense General Headquarters
Bomubu	Defense section (of the block association)
Bugyo Sho	Old name for Metropolitan Police Board
Buke Hikeshi	Knight fire fighters

C

Chiho	Region
Chiho Chokan (Kenchiji)	Prefectural governor
Chiku	Fire district
Chiku Oen Kyugo Han	Local emergency first-aid squad
Chiryo	Medical service
Chobu	2½ acres
Chochikubu	Savings section (of the block association)
Chokai	Block association
Chokai Cho	Block association leader
Chosaka	Damage assessment section (of police bureau, Air-Defense General Headquarters

D

Dai Nippon Boku Kyokai	Great Japan Air-Defense Association
Denreishi	Messenger
Doboku Kyoku	Engineering bureau (of Air-Defense General Headquarters)
Doku Gasu	Poison gas

E

Eigyo Kyoku	Business bureau
Empi	Shovel

F

Fujimbu	Women's section (of the block association)
Fuhatsudan	Unexploded bombs
Fukkyu Kosakutai	Reconstruction unit
Fukumuka	Employment and finance section

G

Gakko Hokokutai	Students' patriotic unit
Gakuto Tai	Student volunteer firemen
Giso	Camouflage
Gonin Kumi	Five-man group
Gunji Engobu	Soldiers' assistance section (of the block association)

H

Haikyu	Rationing
Hanninkan	Ordinary civil official
Hashigo	Ladder
Hinanjo (Kushu Taihi Sho)	Air-raid shelter
Hokyu Keikakuka	Material procurement and planning section (of general affairs bureau, Air-Defense General Headquarters)

I

Ishoku Iyaku Zairyoka	Clothing, food and medical supply section (of business bureau, Air-Defense General Headquarters)

J

Jakan	Hose
Jiei	Home guard
Jinin Sokaika	Personnel evacuation section (of municipal govt.)
Joho Kyoku	Intelligence office

K

Kabuto	Helmet
Kankatsu Kuiki	Battalion district (fire)
Keibobu	Guard arm (of auxiliary police and fire unit)
Keibodan	Auxiliary police and fire units
Keikaku Kyoku	Planning and public works bureau (of municipal govt.)
Keiribu	Accounting department
Keisatsu Kyoku	Police bureau, Air-Defense General Headquarters
Keisatsu Shoboka	Police and fire section (of police bureau, Air-Defense General Headquarters)
Keisatsu Shocho	Chief of Police
Keishicho	Metropolitan Police Board (of Tokyo)
Ken	Prefecture
Kenchikubutsu Riyoka	Building utilization section (of municipal govt.)
Kenchikuka	Building defense section (of municipal govt.)
Kikakuka	Planning section (of municipal govt.)
Kiju Sosha	Strafing
Koen Rokuchika	Parks and cemeteries section (of municipal govt.)
Koheitai	Engineer corps
Koji Gakari	Engineering works (of municipal govt.)
Kojo Boku	Factory air-raid protection
Kojo Johotai	Air intelligence battalion
Konjuhosho	Blue Ribbon Distinguished Service Medal (Red Cross decoration)
Kosei	Welfare
Kosei Sho	Ministry of Welfare
Kosha Ho	Antiaircraft guns
Kotokan	Higher civil officials
Kowan Keibi	Port security
Koyu Zaisanka	Public properties section (of engineering bureau, Air-Defense General Headquarters)
Ku	Ward
Kunrenka	Training section (of general affairs bureau, Air-Defense General Headquarters)
Kushu Keiho	Air-raid alarm
Kushu Keiho Gakari	Air-raid warden
Kushu Keiho Soshiki	Air-raid warning system
Kyujo	Rescue
Kyujoka	Rescue section
Kyukyu Teate	Emergency medical service
Kyuo Kosei	Emergency welfare
Kyuo Teate	First aid

N

Naimu Sho	Ministry of Home Affairs
Nawa	Rope
Nozeibu	Taxation section (of the block association)

O

Okura Sho	Ministry of Finance
Okyu Teate Jo	First-aid post

P

Pompu	Pump

R

Roshitai	Labor unit

S

Saikindan	Bacteria bombs
Seishonenbu	Youth section (of the block association)
Senji Sanji Hogo Ho	Wartime Damage Law
Senso Hoken Rinji Sochi Ho	War Insurance Emergency Measures Law
Senso Shibo Shogai Hoken Ho	War Death or Injury Insurance Law
Shichojo	Substations (fire).
Shiso Keisatsu Kan	Thought police
Shiyu Zaisanka	Private properties section (of engineering bureau, Air-Defense General Headquarters)
Shobobucho	Fire department chief
Shobo Shocho	Fire chief
Shobotei	Fireboat
Shoidan	Incendiary bombs
Shomu Gakari	General affairs division (of municipal govt.)
Shoshi Keizaibu	Economic section (of the block association)
Shuyo Jo	Casualty station
Somu Kaikeibu	General affairs and budget section (of the block association)
So Toku Cho Kan	Regional governor
Sogo Kyusai	Mutual aid
Sokai	Evacuation (dispersal)
Sokaika	Evacuation section
Somu Kyoku	General affairs bureau (of Air-Defense General Headquarters)
Somuka	General affairs section (of general affairs bureau, Air-Defense General Headquarters)
Suido Kasakutai	Waterworks construction unit
Suijo Keibodan	Water auxiliary police and fire unit

T

Tatemono Sokaika	Building demolition section (of municipal govt.)
Te Oshi Pompu	Hand pump
To	Metropolitan District (Tokyo To)
Tohokugun	Northeastern Army
Toka	Lighting
Tokaigun	Eastern Sea Army
Toka Kansei	Light control
Toka Kansei Shido Yoryo	Summary Guide for Light Control
Tokubetsu Bogodan	Special defense corps
Tokubetsu Keibotai	Special guard unit (of auxiliary police and fire unit)
Tokubetsu Shobobu	Special fire arm (of auxiliary police and fire unit)
Tokusetsu Bogodan Shobohan	Factory fire brigade
Tonari Gumi	Neighborhood group
Tosei Shubu	Control center
Tsubo (3.95 square yards)	Square yards (3.95 square yards or 35.582 square feet)
Tsushin	Communications

Y

Yoinka	Personnel Section
Yobitai	Reserves
Yukosho	Order of Merit (Red Cross decoration)

UNITED STATES STRATEGIC BOMBING SURVEY

LIST OF REPORTS

The following is a bibliography of reports resulting from the Survey's studies of the European and Pacific wars. Certain of these reports may be purchased from the Superintendent of Documents at the Government Printing Office, Washington, D. C.

European War

OFFICE OF THE CHAIRMAN

1 The United States Strategic Bombing Survey: Summary Report (European War)
2 The United States Strategic Bombing Survey: Over-all Report (European War)
3 The Effects of Strategic Bombing on the German War Economy

AIRCRAFT DIVISION

(By Division and Branch)

4 Aircraft Division Industry Report
5 Inspection Visits to Various Targets (Special Report)

Airframes Branch

6 Junkers Aircraft and Aero Engine Works, Dessau, Germany
7 Erla Maschinenwerke G m b H, Heiterblick, Germany
8 A T G Maschinenbau, G m b H, Leipzig (Mockau), Germany
9 Gothaer Waggonfabrik, A G, Gotha, Germany
10 Focke Wulf Aircraft Plant, Bremen, Germany
11 Messerschmitt A G, Augsburg, Germany — Over-all Report; Part A; Part B; Appendices I, II, III
12 Dornier Works, Friedrichshafen & Munich, Germany
13 Gerhard Fieseler Werke G m b H, Kassel, Germany
14 Wiener Neustaedter Flugzeugwerke, Wiener Neustadt, Austria

Aero Engines Branch

15 Bussing NAG Flugmotorenwerke G m b H, Brunswick, Germany
16 Mittel-Deutsche Motorenwerke G m b H, Taucha, Germany
17 Bavarian Motor Works Inc, Eisenach & Durerhof, Germany
18 Bayerische Motorenwerke A G (BMW) Munich, Germany
19 Henschel Flugmotorenwerke, Kassel, Germany

Light Metal Branch

20 Light Metals Industry of Germany — Part I, Aluminum; Part II, Magnesium
21 Vereinigte Deutsche Metallwerke, Hildesheim, Germany
22 Metallgussgesellschaft G m b H, Leipzig, Germany
23 Aluminiumwerke G m b H, Plant No. 2, Bitterfeld, Germany
24 Gebrueder Giulini G m b H, Ludwigshafen, Germany
25 Luftschiffbau Zeppelin G m b H, Friedrichshafen on Bodensee, Germany
26 Wieland Werke A G, Ulm, Germany
27 Rudolph Rautenbach Leichmetallgiessereien, Solingen, Germany
28 Lippewerke Vereinigte Aluminiumwerke A G, Lunen, Germany
29 Vereinigte Deutsche Metallwerke, Heddernheim, Germany
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31 Area Studies Division Report
32 A Detailed Study of the Effects of Area Bombing on Hamburg
33 A Detailed Study of the Effects of Area Bombing on Wuppertal
34 A Detailed Study of the Effects of Area Bombing on Dusseldorf
35 A Detailed Study of the Effects of Area Bombing on Solingen
36 A Detailed Study of the Effects of Area Bombing on Remscheid
37 A Detailed Study of the Effects of Area Bombing on Darmstadt
38 A Detailed Study of the Effects of Area Bombing on Lubeck
39 A Brief Study of the Effects of Area Bombing on Berlin, Augsburg, Bochum, Leipzig, Hagen, Dortmund, Oberhausen, Schweinfurt, and Bremen

CIVILIAN DEFENSE DIVISION

40 Civilian Defense Division—Final Report
41 Cologne Field Report
42 Bonn Field Report
43 Hanover Field Report
44 Hamburg Field Report—Vol. I, Text; Vol. II, Exhibits
45 Bad Oldesloe Field Report
46 Augsburg Field Report
47 Reception Areas in Bavaria, Germany

EQUIPMENT DIVISION

Electrical Branch

48 German Electrical Equipment Industry Report
49 Brown Boveri et Cie, Mannheim Kafertal, Germany

Optical and Precision Instrument Branch

50 Optical and Precision Instrument Industry Report

Abrasives Branch

51 The German Abrasive Industry
52 Mayer and Schmidt, Offenbach on Main, Germany

Anti-Friction Branch

53 The German Anti-Friction Bearings Industry

Machine Tools Branch

54 Machine Tools & Machinery as Capital Equipment
55 Machine Tool Industry in Germany
56 Herman Kolb Co., Cologne, Germany
57 Collet and Engelhard, Offenbach, Germany
58 Naxos Union, Frankfort on Main, Germany

MILITARY ANALYSIS DIVISION

59 The Defeat of the German Air Force
60 V-Weapons (Crossbow) Campaign
61 Air Force Rate of Operation
62 Weather Factors in Combat Bombardment Operations in the European Theatre
63 Bombing Accuracy, USAAF Heavy and Medium Bombers in the ETO
64 Description of RAF Bombing
64a The Impact of the Allied Air Effort on German Logistics

MORALE DIVISION

64b The Effects of Strategic Bombing on German Morale (Vols. I & II)

Medical Branch

65 The Effect of Bombing on Health and Medical Care in Germany

MUNITIONS DIVISION

Heavy Industry Branch

66 The Coking Industry Report of Germany
67 Coking Plant Report No. 1, Sections A, B, C, & D
68 Gutehoffnungshuette, Oberhausen, Germany
69 Friedrich-Alfred Huette, Rheinhausen, Germany
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77 German Motor Vehicles Industry Report
78 Tank Industry Report
79 Daimler Benz A G, Unterturkheim, Germany
80 Renault Motor Vehicles Plant, Billancourt, Paris
81 Adam Opel, Russelsheim, Germany
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83 Maschinenfabrik Augsburg-Nurnberg, Nurnberg, Germany
84 Auto Union A G, Chemnitz and Zwickau, Germany
85 Hensehel and Sohn, Kassel, Germany
86 Maybach Motor Works, Friedrichshafen, Germany
87 Voigtlander Maschinenfabrik A G, Plauen, Germany
88 Volkswagenwerke, Fallersleben, Germany
89 Bussing N A G, Brunswick, Germany
90 Muehlenbau Industrie A G (Miag) Brunswick, Germany
91 Friedrich Krupp Grusonwerke, Magdeburg, Germany

Submarine Branch

92 German Submarine Industry Report
93 Maschinenfabrik Augsburg-Nurnberg A G, Augsburg, Germany
94 Blohm and Voss Shipyards, Hamburg, Germany
95 Deutschewerke A G, Kiel, Germany
96 Deutsche Schiff und Maschinenbau, Bremen, Germany
97 Friedrich Krupp Germaniawerft, Kiel, Germany
98 Howaldtswerke A G, Hamburg, Germany
99 Submarine Assembly Shelter, Farge, Germany
100 Bremer Vulkan, Vegesack, Germany

Ordnance Branch

101 Ordnance Industry Report
102 Friedrich Krupp Grusonwerke A G, Magdeburg, Germany
103 Bochumer Verein fuer Gusstahlfabrikation A G, Bochum, Germany
104 Henschel and Sohn, Kassel, Germany
105 Rheinmetall-Borsig, Dusseldorf, Germany
106 Hermann Goering Werke, Braunschweig, Hallendorf, Germany
107 Hannoverische Maschinenbau, Hanover, Germany
108 Gusstahlfabrik Friedrich Krupp, Essen, Germany

OIL DIVISION

109 Oil Division Final Report
110 Oil Division Final Report, Appendix
111 Powder, Explosives, Special Rockets and Jet Propellants, War Gases and Smoke Acid (Ministerial Report #1)
112 Underground and Dispersal Plants in Greater Germany
113 The German Oil Industry, Ministerial Report Team 78
114 Ministerial Report on Chemicals

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115 Ammoniakwerke Merseburg G m b H, Leuna, Germany—2 Appendices
116 Braunkohle Benzin A G, Zeitz and Bohlen, Germany
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123 Europaeische Tanklager und Transport A G, Hamburg, Germany
124 Ebano Asphalt Werke A G, Harburg Refinery, Hamburg, Germany
125 Meerbeck Rheinpreussen Synthetic Oil Plant—Vol. I & Vol. II

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126 Deutsche Dunlop Gummi Co., Hanau on Main, Germany
127 Continental Gummiwerke, Hanover, Germany
128 Huels Synthetic Rubber Plant
129 Ministerial Report on German Rubber Industry

Propellants Branch

130 Elektro Chemischewerke, Munich, Germany
131 Schoenebeck Explosive Plant, Lignose Sprengstoff Werke G m b H, Bad Salzemen, Germany
132 Plants of Dynamit A G, Vormal, Alfred Nobel & Co., Troisdorf, Clausthal, Drummel and Duneberg, Germany
133 Deutsche Sprengchemie G m b H, Kraiburg, Germany

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134 Over-all Economic Effects Division Report
Gross National Product
Kriegseilberichte
Hermann Goering Works
Food and Agriculture
} Special papers which together comprise the above report
134a Industrial Sales Output and Productivity

PHYSICAL DAMAGE DIVISION

134b Physical Damage Division Report (ETO)
135 Villacoublay Airdrome, Paris, France
136 Railroad Repair Yards, Malines, Belgium
137 Railroad Repair Yards, Louvain, Belgium
138 Railroad Repair Yards, Hasselt, Belgium
139 Railroad Repair Yards, Namur, Belgium
140 Submarine Pens, Brest, France
141 Powder Plant, Angouleme, France
142 Powder Plant, Bergerac, France
143 Coking Plants, Montigny & Liege, Belgium
144 Fort St. Blaise Verdun Group, Metz, France
145 Gnome et Rhone, Limoges, France
146 Michelin Tire Factory, Clermont-Ferrand, France
147 Gnome et Rhone Aero Engine Factory, Le Mans, France
148 Kugelfischer Bearing Ball Plant, Ebelsbach, Germany
149 Louis Breguet Aircraft Plant, Toulouse, France
150 S. N. C. A. S. E. Aircraft Plant, Toulouse, France
151 A. I. A. Aircraft Plant, Toulouse, France
152 V Weapons in London
153 City Area of Krefeld
154 Public Air Raid Shelters in Germany
155 Goldenberg Thermal Electric Power Station, Knapsack, Germany
156 Brauweiler Transformer & Switching Station, Brauweiler, Germany
157 Storage Depot, Nahbollenbach, Germany
158 Railway and Road Bridge, Bad Munster, Germany
159 Railway Bridge, Eller, Germany
160 Gustloff-Werke Weimar, Weimar, Germany
161 Henschel and Sohn G m b H, Kassel, Germany
162 Area Survey at Pirmasens, Germany
163 Hanomag, Hanover, Germany
164 M A N Werke Augsburg, Augsburg, Germany
165 Friedrich Krupp A G, Essen, Germany
166 Erla Maschinenwerke, G m b H, Heiterblick, Germany
167 A T G Maschinenbau G m b H, Mockau, Germany
168 Erla Maschinenwerke G m b H, Mockau, Germany
169 Bayerische Motorenwerke Durrerhof, Germany
170 Mittel-Deutsche Motorenwerke G m b H, Taucha, Germany
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174 Kassel Marshalling Yards, Kassel, Germany
175 Ammoniakwerke, Merseburg-leuna, Germany
176 Brown Boveri et Cie, Mannheim, Kafetral, Germany
177 Adam Opel A G, Russelsheim, Germany
178 Daimler-Benz A G, Unterturkheim, Germany
179 Valentin Submarine Assembly, Farge, Germany
180 Volkswaggonwerke, Fallersleben, Germany
181 Railway Viaduct at Bielefeld, Germany
182 Ship Yards Howaldtswerke, Hamburg, Germany
183 Blohm and Voss Shipyards, Hamburg, Germany
184 Daimler-Benz A G, Mannheim, Germany
185 Synthetic Oil Plant, Meerbeck-Hamburg, Germany
186 Gewerkschaft Victor, Castrop-Rauxel, Germany
187 Klockner Humblodt Deutz, Ulm, Germany
188 Ruhroel Hydrogenation Plant, Bottrop-Boy, Germany
189 Neukirchen Eisenwerke A G, Neukirchen, Germany
190 Railway Viaduct at Altenbecken, Germany
191 Railway Viaduct at Arnsburg, Germany
192 Deurag-Nerag Refineries, Misburg, Germany
193 Fire Raids on German Cities
194 I G Farbenindustrie, Ludwigshafen, Germany, Vol. I & Vol. II
195 Roundhouse in Marshalling Yard, Ulm, Germany
196 I G Farbenindustrie, Leverkusen, Germany
197 Chemische-Werke, Huels, Germany
198 Gremberg Marshalling Yard, Gremberg, Germany
199 Locomotive Shops and Bridges at Hamm, Germany

TRANSPORTATION DIVISION

200 The Effects of Strategic Bombing on German Transportation
201 Rail Operations Over the Brenner Pass
202 Effects of Bombing on Railroad Installations in Regensburg, Nurnberg and Munich Divisions.
203 German Locomotive Industry During the War
204 German Military Railroad Traffic

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205 German Electric Utilities Industry Report
206 1 to 10 in Vol. I "Utilities Division Plant Reports"
207 11 to 20 in Vol. II "Utilities Division Plant Reports"
208 21 Rheinische-Westfalische Elektrizitaetswerk A G

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5 Field Report Covering Air Raid Protection and Allied Subjects, Nagasaki, Japan
6 Field Report Covering Air Raid Protection and Allied Subjects, Kyoto, Japan
7 Field Report Covering Air Raid Protection and Allied Subjects, Kobe, Japan
8 Field Report Covering Air Raid Protection and Allied Subjects, Osaka, Japan
9 Field Report Covering Air Raid Protection and Allied Subjects, Hiroshima, Japan—No. 1
10 Summary Report Covering Air Raid Protection and Allied Subjects in Japan
11 Final Report Covering Air Raid Protection and Allied Subjects in Japan

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17 Nakajima Aircraft Company, Ltd.
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(Airframes & Engines)
18 Kawanishi Aircraft Company
Corporation Report No. III
(Kawanishi Kokuki Kabushiki Kaisha)
(Airframes)
19 Kawasaki [illegible] Industries Company, Inc.
Corporation Report No. IV
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20 Aichi Aircraft Company
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24 Japan Musical Instrument Manufacturing Co.
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25 Tachikawa Aircraft Company
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28 Ishikawajima Aircraft Industries Company, Ltd.
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52 Oil in Japan's War—Appendix

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58 Effects of Air Attack on Osaka-Kobe-Kyoto
59 Effects of Air Attack on the City of Nagasaki
60 Effects of Air Attack on the City of Hiroshima

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105 Evaluation of Photographic Intelligence in the Japanese Homeland, Part VIII, *Beach Intelligence*
106 Evaluation of Photographic Intelligence in the Japanese Homeland, Part IX, *Artillery*
107 Evaluation of Photographic Intelligence in the Japanese Homeland, Part X, *Roads and Railroads*
108 Evaluation of Photographic Intelligence in the Japanese Homeland, Part XI, *Industrial Analysis*

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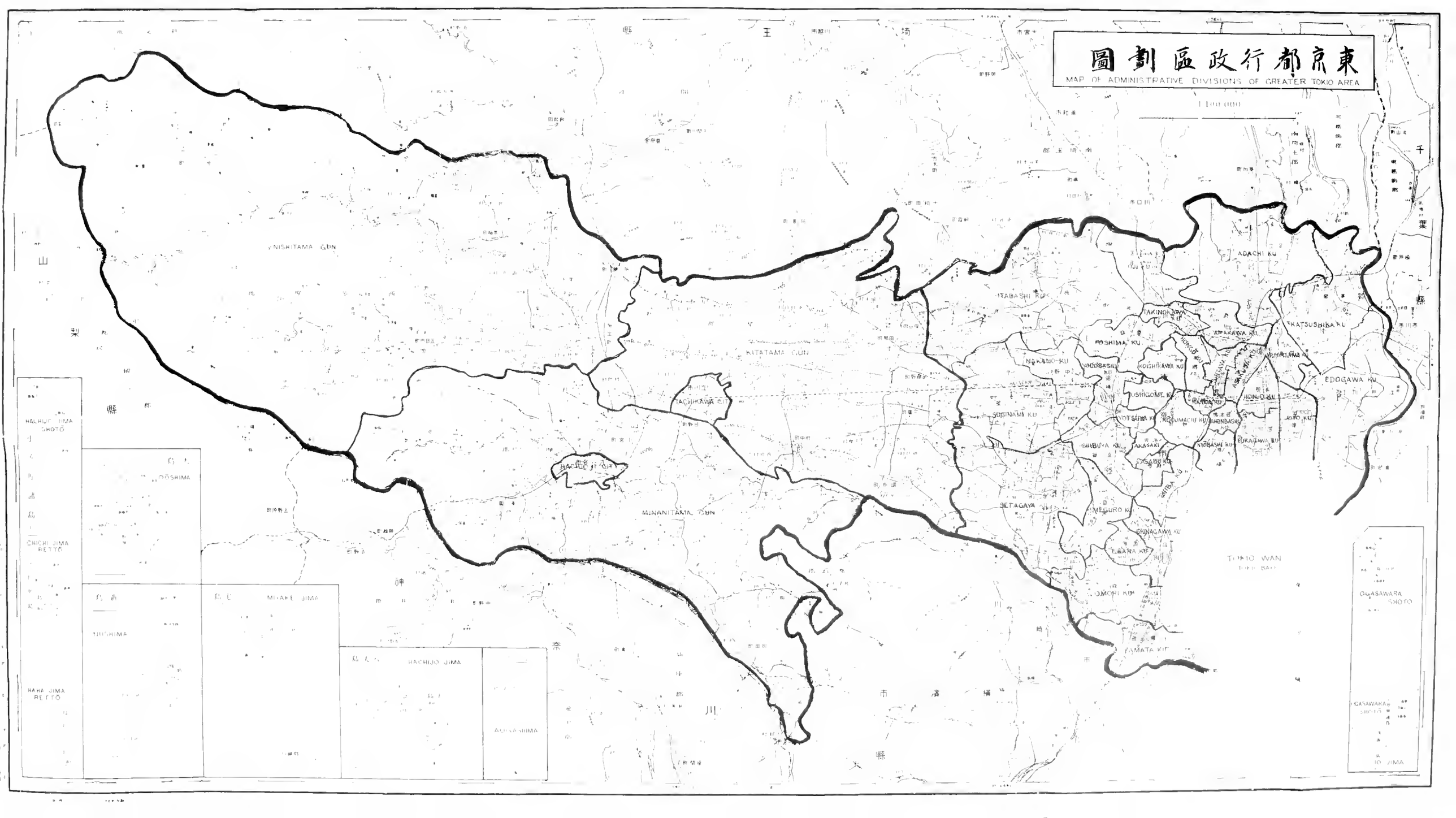
東京都行政区劃圖
MAP OF ADMINISTRATIVE DIVISIONS OF GREATER TOKIO AREA
1:100,000
NISHITAMA GUN
KITATAMA GUN
MINAMITAMA GUN
HACHIJO JIMA
ADACHI KU
ITABASHI KU
NERIMA KU
TAKINOGAWA KU
KATSUSHIKA KU
TOSHIMA KU
ARAKAWA KU
BUNKYO KU
NAKANO KU
SUGINAMI KU
SHIBUYA KU
MEGURO KU
SHINAGAWA KU
OTA KU
TOKYO WAN
TOKIO BAY
OMORI KU
KAMATA KU
EDOGAWA KU
HONJO KU
HACHIJO JIMA
AOGASHIMA
OGASAWARA SHOTO
IO JIMA